UNITED STATES DISTRICT COURT

FOR THE WESTERN DISTRICT OF WISCONSIN

* *

WILLIAM WHITFORD, et al.,

Plaintiffs,

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

GERALD NICHOL, et al., Madison, Wisconsin
May 27, 2016
Defendants. 8:34 a.m.

* *

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

APPEARANCES:

For the Plaintiffs:
Law Office of Peter G. Earle
BY: PETER EARLE
839 North Jefferson Street, Ste. 300
Madison, Wisconsin 53703

Campaign Legal Center
BY: J. GERALD HEBERT
RUTH GREENWOOD
DANIELLE LANG
ANNABELLE HARLESS
1411 K Street NW, Ste. 1400
Washington, DC 20005

Rathje & Woodward, LLC
BY: DOUGLAS POLAND
10 East Doty Street, Ste. 800
Madison, Wisconsin 53703

Lynette Swenson RMR, CRR, CRC
U.S. District Court Federal Reporter
United States District Court
120 North Henry Street, Rm. 520
Madison, Wisconsin 53703
608-255-3821

Continued appearances:

For the Plaintiffs:
University of Chicago Law School
BY: NICHOLAS STEPHANOPOULOS
1111 East 60th Street, Ste. 510
Chicago, Illinois 60637

Also appearing:
Paul Strauss - Chicago Lawyers' Committee for Civil Rights Under Law, Inc.
Dan Brewer - Litigation specialist
William Whitford - plaintiff
Helen Harris - plaintiff
Jim Seaton - plaintiff
Allison Seaton - plaintiff
Wendy Sue Johnson - plaintiff
Wayne Jensen - plaintiff

For the Defendants:
Department of Justice
BY: BRIAN KEENAN
ANTHONY RUSSOMANNO
17 West Main Street,
Madison, Wisconsin 53703

Also appearing:
Jackie Righter - paralegal

* * * * *

I-N-D-E-X

DEFENDANTS' WITNESSES	EXAMINATION	PAGES
SEAN TRENDE	Direct by Mr. Keenan	5-85
	Cross by Mr. Hebert	86-132
	Redirect by Mr. Keenan	132-138
	Recross by Mr. Hebert	140-142
NICHOLAS GOEDERT	Direct by Mr. Keenan	144-201
	Cross by Mr. Poland	202-248
	Redirect by Mr. Keenan	248-252

E-X-H-I-B-I-T-S

PLAINTIFFS' EXHIBITS		IDENTIFIED	RECEIVED
Ex. 128	Trende deposition	102	---
130	Goedert deposition	214	---
156	Chen article	113	113
DEFENDANTS' EXHIBITS			
Ex. 497	Chart	132	258
546	Goedert report	144	---
547	Trende report	20	---
548	Article	154	---
575	Party A/Party B example	4	256
576	Map	72	---
577	Map	73	---
578	Chart	54	54
579	Table	58	---
580	Mayer Baldus report	4	---
581	Census document	4	256

* * * * *

(Proceedings called to order.)

THE CLERK: 15-CV-421. *Whitford v. Gerald Nichol* called for a fourth day of court trial.

JUDGE RIPPLE: A very good morning to everyone. Before we begin, let's ask counsel if there are any matters, housekeeping matters we need to take up and resolve at this point.

MR. POLAND: Your Honors, plaintiffs do have one that Mr. Hebert will address.

MR. HEBERT: Your Honors asked earlier this week when we had some testimony about the GAB and the

legislative -- whether we could reach a stipulation as to the state agency and we have reached a stipulation. We will file it with the clerk's office today.

JUDGE RIPPLE: Thank you. And that stipulation will be accepted and it will be very good to have that in the record when it makes its journey eastward.

MR. HEBERT: No other housekeeping matters from us.

JUDGE RIPPLE: Thank you. Mr. Keenan.

MR. KEENAN: The defendants just have a couple things related to documents. There were several documents used yesterday which didn't have exhibit numbers and it was requested they be added with exhibit numbers, so I'll just list those three documents. Exhibit 575 is the party A/party B 200 votes example that was used with Dr. Mayer. We've listed 580 as Professor Mayer's *Baldus* report, which was put up on the screen. And then 581 is the census document that had the formula that we went over with Professor Mayer. Some of those may be used again with Professor Goedert later today.

There are also four new exhibits that we provided to the plaintiffs that will be used with Mr. Trende, so those will just come up as in the examination. We just provided those to the plaintiffs now. That was our main housekeeping matter.

JUDGE RIPPLE: All right. So those exhibits are -- have they been entered in?

MR. KEENAN: No, I haven't moved them in. We'll discuss them as we go. I understand the plaintiffs will probably object to them. They can object now or at that time when they're used.

MR. HEBERT: We can wait, Your Honor. That way you'll see the context of the objection as well.

JUDGE RIPPLE: All right. Good. Thank you. I think the floor is then yours, sir.

MR. KEENAN: The defendants call Sean Trende.

JUDGE RIPPLE: Mr. Trende.

SEAN TRENDE, DEFENDANTS' WITNESS, SWORN,

JUDGE RIPPLE: Good morning, Mr. Trende.

THE WITNESS: Good morning, Your Honor -- Your Honors.

DIRECT EXAMINATION

BY MR. KEENAN:

Q Now, would please state and spell your name for the record, please.

A My name is Sean Trende. S-e-a-n, T-r-e-n-d-e.

Q Mr. Trende, where did you graduate from college?

A I graduated from Yale University.

Q And what degrees did you get there?

A I had a bachelor's degree with a double major in

history and political science.
Q And what did you go on to do when you graduated; education after that?
A I did. I went to Duke University. I earned a JD. And Duke University had a joint degree program at the time. I also earned a master's degree in political science while earning my JD.
Q As part of the master's program in political science, what types of statistical classes did you take?
A So I took two courses. There's a standard -- all Ph.D. programs have standard statistical tracks that the graduate students take and I took the first two semesters of the Duke University Ph.D. track in statistics.
Q How did that differ from what someone would have taken if they went for the full Ph.D. track in terms of the statistics courses?
A My understanding was at the time it was three semesters of statistics required for the Ph.D.
Q And when did you graduate from those programs?
A I graduated in 2001.
Q What did you do after graduation?
A I clerked for Chief Judge Deanell Tacha, that's T-a-c-h-a, the Tenth Circuit Court of Appeals.
Q And what years about was that?
A That would have been 2001 to 2002.

Q Can you just go through your professional history after clerking?

A So I worked at the DC office of Kirkland & Ellis from 2002 to 2005. Then I got married and we wanted to move, so we moved to Richmond. I worked for Hunton & Williams there. And then in 2009 I went to a small firm, David, Kamp & Frank that allowed me to actually get into court. I was in court almost every day and it was great.

Then my oldest son was diagnosed with autism. My wife is also a practicing attorney and one of us needed to have the job flexibility to take my son to and from therapies and kind of -- I mean I use the term providentially cautiously, but it wakes you up. I got the offer to write for Real Clear Politics a month and a half after we got that diagnosis and that allowed me to do those things.

Q You mentioned Real Clear Politics. What is Real Clear Politics?

A So Real Clear Politics is a online website. We aggregate polling and news data and we also produce original data for audiences.

Q What's your position at Real Clear Politics?

A I'm the senior elections analyst.

Q What do you do as the senior elections analyst?

A I'm sort of the right-hand man to the CEO, John

McIntyre. I follow -- my job is to basically know everything that's going on with elections so that when he asks me something or if I get asked something in an interview, I have the answer at my fingertips. I produce original content for them. I do a lot of research and following of databases and the like.

Q How long have you been the senior elections analyst at Real Clear Politics?

A I don't remember exactly when I got the title, whether it was when I started with them. I think it was when I started full time in 2010, but it might have been when I did some part-time writing in 2009.

Q What type of writing do you do for the site?

A It's mostly what would be considered kind of long-form journalism. Most of my pieces run into the 2000-word ranges, although sometimes you can cover what needs to be covered in shorter time periods. But it's almost entirely covering U.S. elections. I do some Supreme Court coverage toward the end of the term just to kind of keep those skills fresh.

Q And what kind of things do you write about or what would you -- how would you describe your -- the articles you write?

A Well, they tend to be -- they aren't journalism pieces. I'm not going out and interviewing candidates.

They're more data analysis of what's going on with elections. I do a lot of work in demographics, how political coalitions are shifting over time. Those are probably my most prominent writings.

Q Do you do anything with respect to the rating of congressional districts?

A Yes. So Real Clear Politics, as does a lot of what Charlie Cook and people like Stu Rothenberg, Larry Sabato, the tracking and rating of Senate and House races and then presidential races this year as well.

Q What do you do with respect to those kind of things?

A So I am in charge of assigning the writings. I work with the CEO on Senate races, but the House races are my own, and it's a matter of kind of figuring out where things sit on the ground, if you will, looking at the fundamentals of the district, how the districts lean in terms of partisanship, how they were drawn, and then figuring out how that interacts with the candidates that are running.

Q Do you write for any other publications other than Real Clear Politics?

A I am still a senior columnist for Crystal Ball, Larry Sabato's Crystal Ball. Larry Sabato is a professor at the University of Virginia; haven't published for them in awhile because it's been a crazy year, but there's an

article under submission and planning on getting going with that again as the election draws nearer.

Q What is Crystal Ball?

A So it's his name for his website, which is similar to the type of stuff that I do at Real Clear Politics. It rates the competitiveness of Senate and House races. It's a little different than the Real Clear Politics audience. Because Dr. Sabato is a political scientist, his audience tends to be a little bit more technical and academic.

Q Have you authored any other publications?

A So I wrote a book, *The Lost Majority: Why the Future Government is Up for Grabs - and Who Will Take It*. It was an analysis of the 2010 elections. You go back to 2008 and a lot of people thought after the election of Barack Obama that we were kind of entering a period of one-party Democratic rule and that didn't pan out. And so the book kind of analyzes the question of why and it was ultimately a revisionist take on a realignment theory along the lines of what David Mayhew of Yale University had written.

I'm also -- I coauthored the 2014 *Almanac of American Politics*, which is this kind of standard text for understanding congressional districts and the people who represent them. I had about 15 states where I had to

do kind of in-depth dives into the demographics and how the states were changing, what their histories were and so forth. And then I've authored two chapters in books published by Dr. Sabato.

JUDGE RIPPLE: Excuse me just a minute.

THE WITNESS: Yes, Your Honor.

(Pause)

JUDGE RIPPLE: Counsel, you can proceed now.

BY MR. KEENAN:

Q I just want to go back to the book that you published, *The Lost Majority*. What kind of research did you do for that book?

A Actually I used my JSTOR account, J-S-T-O-R, which is the academic database I can get through my Yale University alumni and just actually started with the *Journal of Politics* in about 1920 and went through to find everything I could find with elections and realignment theory, and then went through *American Political Science Review* -- I'm blanking out -- the *Journal of American Politics*, *Our Journal of Politics*, and read everything that was in the literature about realignments and political coalitions.

I did a lot of county-level analysis of how demographics or how political coalitions had shifted over time in the states to see how that interacted with the

Democrats' ability to win the House.

Q And what kind of conclusions did you draw from that research?

A Well, it was fairly obvious that the Democrats -- part of the problem -- there were a lot of problems the Democrats had in 2010, but part of the problem was that especially if you compared back to Bill Clinton's 1996 win, which was a similar national win to President Obama's, about eight points -- seven or eight points the Democrats' geographic coalition had shrunk. It had grown in the cities, you know. It had become more prominent in urban areas, but in rural areas in particular, the tide had kind of receded. So they had a deeper coalition, but it was a narrower coalition.

Q What kind of effects did that have for the Democratic party that you found?

A Well, it's in more detail in the report, but it just made it more -- it made it more difficult for them to win these congressional districts that necessarily covered geographic areas. And you can compare the number of districts in areas won by President Clinton to those won by President Obama, even when they were winning nationally by the same amount. And it's plain to see that this shift in geography had hurt them.

Q Are you aware of whether your book is relied upon in

political science departments?

A Well, I haven't -- obviously I haven't done a national test of syllabi. I know that Professor Mayhew at Yale has used my book in his course. I've received correspondence from professors saying that they've used it. I know that it's been used at Hope College in Ohio Wesleyan. So those are three that I know for certain.

Q You also mentioned the *Almanac for American Politics*. Can you just explain what that is?

A So this is a book that was started in 1971 by Michael Barone. It was actually designed as a guidebook for student protesters to target their demonstrations of congressmen. It went through the districts and gave an overview of the districts and it was actually meant to give an idea of who was receiving money from defense contractors. But it's kind of grown into this deep -- each congressional district receives kind of a deep dive treatment as to its history, its geography, how its economy is based, and then there's also profiles of all 435 Democratic congressmen. And my work was focused on the first half of that, doing the deep dives into the congressional districts for the states which I was assigned.

Q And how is the *Almanac of American Politics* regarded amongst people that write about politics?

A I think Chuck Todd referred to it as the Bible for political analysts. It's widely cited. It's the premier and I think now only source of its kind.

Q Who's Chuck Todd?

A He's the chief political analyst -- he's the host of *Meet the Press*.

Q You also mentioned some chapters in books published by Dr. Sabato. Could you explain a little bit more what you wrote there?

A So the first chapter I wrote was after the 2012 elections. And his books are a collection of chapters by commentators in academics and each chapter covers a discrete topic in the election. My first chapter in 2012 was whether 2012, the demographics we had seen in it, represented a realigning election, a permanent shift in American politics. And I said well, first I don't really believe in realignments, following Mayhew and some other professors, the modern -- consider the modern take on it. But even if we take the test that was set up for realignments, 2012 doesn't count.

2014 was more of a look at the electoral college, how the competitiveness of states interacts with the popular vote and what we might expect to see in 2016. Of course that was a pre-Donald Trump analysis, which kind of mixes up the apple cart, I think.

Q Do you do speaking engagements?
A I do. I speak for a variety of think tanks. Academic institutions and private banks and consultant groups ask me to give speeches on elections.
Q Is your work relied upon by others who write about politics?
A Absolutely. It's widely cited, not only by commentators, but also by academics.
Q Can you provide some examples?
A I know Alfred Cuzán at the University of Florida has used it. He asked me to hurry up and write a third part of a statistical analysis I was writing on regression analysis so he could use it in his course. I did a three-part series on statistics that he was using to teach from. I know that -- and I know, like I said, Dr. Mayhew has used my book in his course.
Q And what about, not academics, but some just people who write about politics for a living?
A Absolutely. I think it's been cited in every major news publication, cited on the news, yes.
Q Do you do television and media appearances?
A I do media appearances for anyone who invites me. Oddly I've never been on CNN, but I've been on MS-NBC and Fox News.
Q What kind of things do you talk about when you're

doing these media appearances?
A Demographics and elections. In off years, odd-numbered years it tends to be more big picture demographic-type stuff. In even-numbered years, obviously the focus is more on the House race or horse race.
Q Have you provided expert testimony in any other cases?
A I have.
Q Can you explain what those cases were?
A So in -- my first case was 2012 in North Carolina state court, a redistricting, a racial gerrymandering litigation there. My report was accepted without objection and they did the case on the papers. I testified in the North Carolina -- not the voter ID portion -- the early voting litigation. And I testified in Ohio for a similar litigation.
Q You mentioned a North Carolina early voting case. Has there been a decision in that case?
A There has.
Q When did that decision come out?
A The decision came out probably a month ago.
Q Did the decision rely on any of the opinions you submitted in the case?
A Yes, it did.

MR. KEENAN: I understand there's a *Daubert* motion pending. I would tender Mr. Trende as an expert in the study of elections and the history of elections. I understand the Court is probably going to take that under advisement, but we would do that now.

MR. HEBERT: Your Honor, in response to that, we will have questions about this witness's qualifications during cross and I understand the Court is carrying that motion until a later date. So we would ask the Court to reserve a ruling.

JUDGE RIPPLE: That's correct, and the Court will reserve a decision on the *Daubert* motion until a later date. Mr. Keenan, you can proceed with the witness.

BY MR. KEENAN:

Q Mr. Trende, what is the partisan index?

A So the partisan index -- this was discussed a little bit in the plaintiffs' case, but the partisan index is a way to compare elections that might have occurred in different environments. I think the easiest way to conceive of this, in 1984 Ronald Reagan narrowly wins Massachusetts. And so if you only look at that number, you say wow, Massachusetts was a swing state in 1984. And then you would look at -- shift to 1996 or 2008 when Bill Clinton and Barack Obama were winning 60 percent of

the vote in Massachusetts and say wow, that state really swung over time. But, of course, that's not right.

What happened was in 1984 was a very good Republican year and so states that were heavily Democratic were kind of at the median or were 50/50 states. And so what you do to control for these swings in the national environment -- there's different ways you can do it, but the simplest way is to just simply subtract out the national vote share. So you say yes, Ronald Reagan won 51.2 percent of the vote in Massachusetts in 1984, but he was winning nationally by 59 percent. So Massachusetts was eight points more Democratic than the country as a whole.

You go to 1996 when Bill Clinton is winning 60 percent of the two-party vote in the state and you say okay, but he was winning 54 percent of the vote, two-party, and when I say two-party, I mean excluding third-party candidates. It's the standard way to deal with the third-party candidates. Nationally he was winning 54 percent of the two-party vote, so that state was D plus 6 in 1996.

And if you do that with Massachusetts, you actually find a fairly stable partisan index of about eight points more Democratic than the country as a whole, which of course we know that's how Massachusetts really is top to

bottom. It's a solidly Democratic state.

The same thing is true, you can do it the other way with Republican states. In 1996, South Dakota was fairly close and in 2008 Montana was fairly close. They both went Republican. But that's because those were good Democratic years where the Democrats were doing well nationally. Those states were still substantially more Republican than the country as a whole. So it just allows to make sure you're doing an apples-to-apples comparison when you're comparing presidential elections. You want to take a further level of abstraction and start controlling for sea level, with the national vote share being the sea level.

Q Do you use the partisan index in your work?

A Oh, absolutely. It's kind of a foundational way to do those comparisons across elections.

Q In what ways do you use it in your work?

A Well, as I said, it's a way to kind of normalize for the national vote and so -- regularly use it for assessing the competitiveness -- it's not quite right to say I use it to assess the competitiveness of congressional districts. It's a test of partisanship. It's the partisan voting issue -- index, not the competitiveness voting index. And so it's a way to determine the partisan lean of political units and then

you can use that info in turn as part of your analysis of the competitiveness of the congressional district.

And of course when you understand what the partisan index is, there's no reason it can't be applied to other units of political -- other political subdivisions to see how counties compare to the country as a whole or even demographic groups to the country as a whole.

MR. KEENAN: I was going to ask permission to approach Mr. Trende with two documents. One is just a copy of his report that he can refer to once we get into it, and then also as part of his examination we are going to look at some of the stipulated facts that have been agreed to by the parties in the pretrial report. So I'm going to be providing him with a subsection of that very long document that contains stipulated vote totals in Wisconsin's history. This document is paragraphs 257 through 287 of Docket 125, the joint pretrial report. May I provide copies of those to the witness?

JUDGE RIPPLE: The document has been marked as an exhibit?

MR. KEENAN: Exhibit 547. His report.

JUDGE RIPPLE: Thank you. You can approach the witness and hand him those documents. I assume counsel has a copy?

MR. HEBERT: Yes, we do, Your Honor.

BY MR. KEENAN:

Q And if we could pull up Exhibit 547, Mr. Trende's report. Look at paragraph 79. Actually perhaps we could go back a page and look at paragraph 78. Mr. Trende, could you explain what paragraph 78 and the chart in paragraph 78 represent?

A So paragraph 78 is the partisan index of Wisconsin over the past, I guess, 40 years -- 36 years. And so again, this kind of illustrates the utility of the partisan index. You look at Wisconsin, which was a very close state in 2002. I think it was two points. In 2012 or 8, it was a 12-point state. In 2007 it was somewhere between. So you would look at that and say wow, this state is really shifting radically between the parties. But the answer to that is well, no, 2004, 2008 and 2012 took place in very different national environments. So when you control -- when you normalize for that presidential vote share, you see that the state has actually been fairly stable. It's moved up and down with the national tide, a point or two more Democratic than the country as a whole.

Q If you look at the dot for 1988, what does that represent?

A So 1988 is the Dukakis/Bush election. And it was back in the late 80's in particular, the state was pretty

Democratic. You can see it reached a peak of six points more Democratic than the country as a whole before becoming a little bit more of a swing state in the 90's.

Q If we could change to the stipulated facts in the pretrial report and look at paragraphs 259 and 260. These paragraphs contain some vote totals for the 1988 presidential election in Wisconsin and the country as a whole. Can you explain how you would go about calculating the partisan index of Wisconsin in 1988?

A Absolutely. I have a calculator on my phone. I have done my best to ensure the ringer is turned off and I don't think anyone will call me. I don't know if there's a legal pad. Can I just -- the lawyer in me just cannot write on documents in front of me.

Q Sure.

A Thanks, Brian. So if you're trying to calculate the partisan index, the first thing you need to know is the national share of the two-party vote. And so what you would do is you would add -- you need to know the Wisconsin share of the two-party vote. So you would take Michael Dukakis's 1,126,794 votes and you would divide that by Dukakis's vote 1,126,794 plus George H.W. Bush's vote 1,047,499 and that sum would give or that dividing -- I'm blanking on the quotient -- would give you the -- would give you Dukakis's share of the

two-party vote, which is 51.8 percent.

And then you would do the same thing nationally. You would say okay, what was the two-party vote nationally and so you'd do that analysis and it's -- Michael Dukakis won 46.1 percent of the two-party vote. And so then to calculate the partisan index, you would subtract it. So you'd subtract out the national vote total, 51.8 percent minus 46.1 percent is 5.7 percent. So Democratic PVI of approximately six points.

Q What does that tell you about Wisconsin in 1988 then?

A It tells me that it was a pretty Democratic state at the time. It was about as Democratic as Maine is today.

Q If we could turn back to 157 in Mr. Trende's report. And now -- 547, and look at paragraph 79. There's a map here in paragraph 79. Can you explain what that map does?

A So this shows the partisan index at the county level. And again, this allows you to normalize for national conditions to see how the counties in Wisconsin stack up against the national vote shares. So what you can see is that the northwestern portion of Wisconsin is pretty blue, and then you see these patches also of heavy Democratic strength, Dane County and the south middle. You have Milwaukee County. Menominee County up in the

northeast. Those were places where -- and I had to, in order to make this actually show anything useful, I had to cap the PVI's on the -- or the partisan indexes on the map at plus or minus 10 percent. So once you get dark blue, it's heavily Democratic. Dark red is heavily Republican. Those are counties -- Menominee County was a partisan index 27-point Democratic lead. Douglas County in the north was 22. Milwaukee was Democrat plus 15. Ashland up in the north was Democrat plus 15, and Dane is Democrat plus 14, so heavily Democratic leaning.

Q Just to be clear, what does the blue represent and what does the red represent?

A The blue is how heavy -- it's a scale -- how heavy the Democratic lean of counties is and the red is a scale of how Republican the scale is. And if it's white, it means it's close to 50/50 in terms of normalized for the national vote share.

Q Looking at this map, what does it tell you about the State of Wisconsin in 1988?

A Well, if you look at it, the Democrats actually had a broad coalition at the time. They were competitive in most areas of the state. They did have some clustering occurring in Dane and Ashland, Superior, Milwaukee, but they had strength in the rural areas as well, especially in the northwest where David Obey was untouchable at the

time.

Q If we could flip forward to paragraph 80 with the map portion. What did you do to study Wisconsin over time in terms of its political leanings?

A So what I did is I generated -- first I looked for years that had similar partisan indices because we want to compare apples to apples as much as possible. And it just so worked out that there were three states or three years, 1996, 2004 and 2012 that were evenly spaced where Wisconsin's partisan index was almost identical. So again, you have a very nice apples-to-apples comparison looking at those four -- those three years.

And so then what I wanted to do, I computed the partisan index for each county over time and it kind of allows you to visually see how the Democrats' geographic reach recedes into a few key counties.

Q If we look at the map in 1996, what does this tell you about Wisconsin's distribution of partisans?

A So as we saw when I did the time series from 1980 to 2012, Wisconsin's overall partisan index drops between '88 and 1996. It becomes a swing state overall. And so we can see that the state is redder, it's less blue especially -- I'm going to test this -- in the northwestern part of the state. But there's still some real Democratic strength there. And we see there is some

reddening here, but these other counties, Dane, Milwaukee, and then Menominee do become more blue -- bluer.

MR. KEENAN: If we could turn back to those stipulated facts. We will look at paragraphs 265 to 268. We could just -- not look at 268 right now, 265 through 7.

Q So if you just explain, like, the first step you do in calculating a county's partisan index in this 1996 year.

A Well, for a county partisan index you would have to look at 268.

Q Well, can we -- what about the national vote share? Maybe we could just do that first and then go to the counties.

A So the national vote share is the same exercise that we kind of went through before. You would look at Bill Clinton's vote, which is 1,071,971, you divide it by the total number of votes cast, that 1,071,971 plus Bob Dole's 845,029, and it turns out that Bill Clinton won the state with 55.9 percent of the two-party vote.

Q Then we're going to move on to the counties. What are you going to end up doing with Bill Clinton's 55.9 percent of the vote?

A Well, nothing. You would look at the national vote

share --

Q Okay.

A -- in paragraph 266. So nationally Clinton wins 54.7 of the two-party vote. You divide that with Bob -- you go through the same exercise to get that 54.7 percent of the two-party vote nationally. So you keep that number in mind. What you do is you do the same exercise for the counties. So, for example, in paragraph --

Q Just hold on. Let's go down --

A I get excited. Sorry.

Q -- to the chart and let's do this exercise for Dane County.

A Sure.

Q Here we see Dane on the somewhat bottom of the screen here.

A So Dane County, Bill Clinton wins 109,347 votes. Okay? And what you're going to do is you're going to take that 109,347 and you're going to divide it by -- you've hopefully computed the two-party total, 168,834, and it comes up with him winning 64.7 percent of the two-party vote. Now, that's just the absolute vote total. You have to normalize, you have to take account of the fact that this was a good Democratic year, and so nationally the environment is such that he's winning 54.7 percent of the vote. It comes out. You subtract that

and it comes out to D plus 10.

Q So what does that tell us about Dane County?

A Dane County is Democratic.

Q And then why don't we go down to the next page and run the same exercise for Milwaukee County.

A So Milwaukee County, it's the same exercise. Bill Clinton wins 216,620 votes. You divide that by 336,027 votes to get the two-party vote total, and I'll do that. 216,620 divided by 336,027, 64.4 percent. You subtract the national vote share of .547, you get a Democratic plus 10, plus 9.7.

Q Let's just take one other example. Let's look at Marathon County. Can you do this for Marathon County?

A So Marathon County, you have Bill Clinton wins 24,012 votes. You divide that by the two-party vote total of 43,886, and so Bill Clinton wins that state -- that county with 54.7 percent of the vote. Of course, that's almost identical to his national vote total. It comes out as a wash.

Q Okay.

A And so Marathon is kind of a swing county.

Q Would that be like a 0 perhaps?

A Yeah. The label would be even.

Q Okay. Let's go back to Exhibit 547, the 1996 map that we were just looking at. So could you just perhaps

point out those counties on the map and then show how the numbers we just calculated relate to the colors here?

A So there is your Dane County. There's Milwaukee County. And I believe this is Marathon County. And so you can see that Dane and Milwaukee are down. I think I accidently drew that line into Ozaukee, but it's the blue county there. And then Marathon is that almost box county, the rectangular county in the middle of the state that's white.

Q Let's move ahead to 2004. That's paragraph 81. It's going to be the next page of the report. Go down to the next page, please, and blow up the map. Can you explain what this map is?

A So this is the next year that there was a similar partisan index overall to Wisconsin and so it shows how the Democratic coalition shifted and the Republican coalition shifted, and kind of the key thing is that this area -- and even this area continues to get redder. Now, this area -- I just drew a bunch of arrows, I'm sorry -- becomes very blue and as we do the calculations, you'll see some of these other areas also become very blue. So you can really see visually the Democrats' coalition, the tide receding into these key counties for them.

Q Let's go back to the stipulated facts. Now we're going to look at paragraph 573 and 4.

A 573?
Q Sorry. 273.
A Okay.
Q Okay. So in 273, what does this show us here, paragraph 273?
A So 273 is the overall -- 273 shows us the two-party vote calculation for George W. Bush and John Kerry in the 2004 elections. It's the same total. You come up with 51.24 percent/48.76 percent.
Q Okay. And then how are we then going to end up using that?
A It's the same way. You will subtract that out from the county two-party vote total. Again, that's to allow you to compare meaningfully 1996, a very good Democratic year, to 2004, more of a 50/50 year, and see the underlying distribution of the partisans.
Q When you said Wisconsin partisan index, the state partisan index was similar between the years. What does that mean even though the '96 and 2004 elections were different in terms of the national outcome?
A Well, again, I kind of use the analogy that Wisconsin is kind of consistently moving up and down with the national environment. The economy is very good for a Democrat and the Democratic president is popular as in 1996. The country as a whole becomes more Democratic and

Wisconsin has followed that. It was a point more Democratic than the country as a whole.

In 2004, you had a modestly popular Republican president and an economy that was doing okay. The country was overall more Republican than it was in 1996 and Wisconsin moved in a similar direction, it was about a .2 more Democrat than the country as a whole.

Q Let's look at the chart here with the vote totals and we'll look at Dane County again.

A Okay.

Q Why don't you calculate the partisan index for Dane County in 2004.

A So you take John Kerry's 181,052, you divide it by the two-party vote total of 271,421, and you get 66.7 percent. So John Kerry won 66.7 percent of the two-party vote. But you have to subtract out that nationally John Kerry was winning 48.8 percent of the two-party vote. I did that wrong. And in that year, Dane County was 17.9 percent more Democratic than the country as a whole.

Q How did that compare with 1996?

A So it's about eight points more Democratic in 2004 than it was in 1996.

Q And let's do the same exercise for Milwaukee County.

A So Milwaukee County, 297,653 divided by 477,940 -- try that again. 297,653 divided by 477,940. 62.27

percent for Kerry.

Q And so then what's the partisan index of Milwaukee County?

A So you go back, you subtract out 48.767, you get 13.6.

Q And then how did that compare with 1996?

A It was D plus 10 in 1996, so Milwaukee County became about four points more Democratic.

Q Although not quite as much change as with Dane County.

A That's correct.

Q Now, the City of Milwaukee Election Commission also tabulates its vote totals separately, so we have a convenient total right under that for the City of Milwaukee itself. Can you calculate the partisan index for the City of Milwaukee in 2004?

A Sure. So 198,907 votes for Kerry divided by 274,653, for both candidates combined you get 72.4 percent for John Kerry. You subtract out -- make sure I have the right number -- 48.76, you get D plus 23.7.

Q Okay. So what does that say about the City of Milwaukee compared to the County of Milwaukee?

A It's more Democratic than the county as a whole by a substantial margin.

Q Okay. And let's do Marathon County again.

A Okay. So Marathon County was 30,899 votes for John Kerry divided by 67,293. 67,293. You get John Kerry wins 45.9 percent of the vote in Marathon County. And to turn that into the partisan index again, you control for the national environment, you subtract out 48.76, .4876, and at that point the County is -- has a 2.8 percent Republican lean, so it's R plus 2.8.

Q And how did that compare with 1996?

A It was even in 1996. So Marathon has become about three points more Republican.

Q Let's go back to Exhibit 547 and we'll look at the map we were just looking at in paragraph 81. You mentioned that you had to scale these colors. Can you explain what that means in terms of Dane County and Milwaukee County in this map?

A Well, again, you have these counties, like, actually Menominee County is like D plus 30. And so if I were to scale this over the entire course -- the entire spectrum of counties, you would basically see a dark blue for Menominee County, maybe a red for Ozaukee County, and everything else would look white and it's because they're such outliers. So to make it so you can actually see what's happening in the state as a whole, I kind of cap the scale at negative 10 and plus 10. So once it becomes the darkest shade of blue, it's very Democratic or very

Republican and you can then see the movement in the middle.

Q Okay. Let's move forward to 2012. This is paragraph or actually sorry, let's stop. We'll go to paragraph 83. There's a map on the next page. Can you explain what that map shows?

A So this just shows the county-by-county change from 1996 to 2004 and so this illustrates what we were just talking about that Dane County becomes a lot bluer, Milwaukee becomes with four points bluer, Menominee County a lot bluer. These three counties up here with Superior, Ashland and Bayfield in them become a little bit bluer. And then you just see the rest of the state, the rural areas. There's some more in the southwest, but overall the state, the counties, the geography becomes a lot redder.

Q Okay. Now, let's move forward to paragraph 84. Let's just focus on the top chart there. Can you explain what this chart represents?

A So this is fast forwarding again to the next year where we have an overall partisan index of somewhere between D plus 1 and D plus 2, which is 2012. And so this year shows 2012 and we can see kind of -- this is the current configuration where you have a heavily Democratic cluster up in the northwest, you have

Milwaukee County, Menominee, and then a cluster around Dane County. And everything else -- the southwest corner has become bluer, and you can see that -- keep want to say Gunderson, but I guess it's Keen's district becoming very Democratic. Obviously Dane County would have a hard time electing Scott Klug to Congress today, but the rest of the state has become pretty Republican.

Q Okay.

A And the interesting thing is that we've kept the overall partisan index of the state constant, so it's not like the state's political orientation as a whole has changed a lot. It's just been tradeoffs. Those clusters I had circled became more Democratic, but it's been offset by the rest of the state becoming more Republican.

Q Let's go to the stipulated facts. Go to paragraph 280. Just explain what's referenced here in paragraph 280.

A 280 shows -- paragraph 280 shows the two-party vote, again excluding third parties for presidential election in 2012. So President Obama wins re-election with 51.96 percent to Governor Romney's 48.04 percent.

Q So now we're going to move on to the individual counties. Could we go down and look at Dane County.

A Of course.

Q Could you calculate the partisan index for Dane

County?

A So Dane County, President Obama wins 216,071 votes and you would divide that by the two-party vote total which is 299,715 votes. So President Obama wins 72 percent of the vote -- 72.1 percent of the vote in Dane County.

Q Then how do we go about calculating the partisan index for that?

A Well, you have to subtract -- we have to take into account that this is now a better Democratic year, better environment than Republicans had in 2004. It's not quite as good as Democrats had in 1996. So to allow us to make the comparison, you subtract out the national vote total for President Obama, which is .5196, and so now Dane County is 20 points more Democratic than the country as a whole.

Q How does that compare from '96 to 2004 to 2012?

A About a 10-point shift towards the Democrats.

Q In '96 what was it?

A In '96 it was 10, in 2004 it was 17.9, and then here in 2012 it's D plus 20.

Q And then let's look at Milwaukee County first.

A So it's the same exercise. 332,438 votes divided by 487,362 votes. President Obama wins 68.2 percent of the vote in Milwaukee County. You would subtract out

President Obama's -- what did we say, I think I know the answer -- 51.96, minus .5196, and you have D plus 16.

Q So how does that compare from '96 to 2004 to 2012?

A So 2004 to 2012, it's about a two-point shift towards the Democrats for the county as a whole and from 1996 it's about a six-point shift towards the Democrats.

Q Let's look at the City of Milwaukee subtotal there. Can you do the same exercise?

A 227,384 divided by 283,937 would give us President Obama winning 80.1 percent of the vote. We subtract out 51.96 and you're left with D plus 28.

Q How does that compare to -- 2004 was the only year we've been able to do this City of Milwaukee comparison?

A In 2004 we said, I think, 23.6, call it 24 rounded, so about four points towards the Democrats.

Q And that's after it was already 23 points favored to the Democrats?

A Yeah. The City of Milwaukee became about four points more Democratic from 2004 to 2012.

Q So what do these changes between '96 and 2012 in Milwaukee and Dane County tell you about the Democratic Party in Wisconsin over that time?

A Well again, it's increased its vote shares in these heavily populated areas. And since we looked at years where the partisan index of the state as a whole were the

same, we know that that increased vote share in these urban areas has to be offset somewhere else, which is the nonurban areas as we'll see in the maps.

Q Okay. If we could look at -- let's go back to 547.

A We can see that if we do Marathon County.

Q Oh, yeah. I forgot to have you do Marathon County. Let's do Marathon County if we're going to complete our exercise here.

A So Marathon County is 32,363 votes for President Obama. You divide that by the two-party vote of 68,980. You end up with President Obama winning 46.9 percent of the two-party vote. You subtract out his .5196 and you end up with the Marathon County having a lean now, a Republican lean, of 5 exactly.

Q And how does that compare over this time period we've been looking at?

A Well, it goes from being evenly matched in 1996 to having a 3-point lean, Republican lean in 2004, to having a 5-point Republican lean in 2012. So it goes from being pure swing territory to being an area that has a substantial Republican lean. When we do congressional district analysis, we find that once you get to a partisan index of plus 5 or minus 5, that's where the district ceases to be competitive more or less these days and they're no longer winnable for both the parties.

Q Go back to Exhibit 547 and look at paragraph 84. But we'll look at the second map here at the bottom. What does this map show?

A So this is the partisan index change from 2004 to 2012. Again, the bluer counties showed more of a shift from 2004 to 2012 and the redder counties showed more of a Republican shift from 2004 to 2012.

Q And then if we could go to the next paragraph, paragraph 85. There's another map that we'll look at. What does this map show?

A So this is the overall shift from 1996 to 2012, again, the two years that have the same overall statewide partisan index. And so it kind of reflects everything that we've talked about so far. Dane County has become much more Democratic, gone from an area that can elect a very moderate Republican in Congress to one where we think it's mostly impossible in normal circumstances. Milwaukee County has become substantially bluer. Menominee has become bluer. We have some slight blueness up here. The rest of the state, including Marathon County, has mostly become redder.

Q Going to paragraph 86, did you analyze the comparison between President Obama's vote and Bill Clinton's vote and how that compared across the counties in the state?

A Yeah. To try to give some further perspective to this, going back to 1988 or going back to 1992, the largest Democratic vote margins in the state came from Dane, Milwaukee and Rock Counties, and so I wanted to see kind of how these -- how much of the Democrats' vote is accounted for in the different years to again illustrate the Democrats' vote share coming into these counties.

And so in 1996, you can look at them and he carries these three counties combined with 64 percent of the vote. But he also carries the rest of the state overall with 52 percent of the vote. So there's a difference of 12 percent between these kind of three core Democratic counties and the rest of the state. But he's still winning the state.

Fast forward to 2012. Barack Obama wins the state with a lower vote total in Wisconsin and nationally, but he carries these three counties with 69 percent of the vote. So even though his overall vote total is falling, it's going up in these three Democratic counties. He's doing better in Madison and Milwaukee and Janesville. Moreover, he's losing the rest of the state to Mitt Romney, 47 percent to 53 percent. So the gap between these three core Democratic counties and the rest of the state has gone from 12 points to 22 points.

Q Now, we've been talking about presidential election

results and this is a case about state legislative election results. What conclusions can we draw from looking at the presidential vote totals as they would apply to state legislative elections?

A Well, as plaintiffs' experts demonstrated, there's a correlation between Democratic vote share and state legislative vote totals. And so as the president's vote share increases in an area, the legislator's vote share -- the Democrats are going to have better opportunity to win. And as they demonstrated, as an area becomes more Republican, the Republicans are going to have a better opportunity to win.

Now, since we don't have proportional representation in this country where you get your congressional seats allocated on your percentage of the vote -- there's a fun academic debate over whether we should, but we don't; there's a geographic basis to our representation. And so if you don't have an ability to win in a rural area in this country, which covers a lot of geography, if it is even marginally red, if it goes from being marginally blue to marginally red, it becomes more difficult to win areas. If your core urban precincts go from being 10 points more Democratic to 20 points more Democratic, you're going to win anyway. But if the rest of the state goes from being a slight Democratic lean to a slight

Republican lean, you start to lose seats out there.

Q Now, through this time period we're looking at, '96, 2004 and 2012, what was happening with the Democratic statewide vote totals as opposed to these county analyses?

A I'm sorry?

Q The Democratic statewide vote from '96, 2004 and -- let's just compare '96 and 2012. How is the comparison between the statewide vote for Clinton and Obama?

A Oh, President Obama in 2012 did, I think -- he did a little bit worse than President Clinton.

Q Okay. But where was the nature of where those votes came from?

A Well again, the partisan index of the state doesn't change, and so you can see, as I said in paragraph 86, President Obama's vote total goes up in these three core counties of Milwaukee, Dane, and Rock. But in the rest of the state, he actually flips from President Clinton winning the rest of the state to President Obama losing the rest of the state.

Q Let's look at paragraph 87. There's a map here Can you explain what this map represents?

A Sure. So this takes us to a different level of analysis. We're going from the county level down to the ward level, and unfortunately I don't have -- didn't have

ward-shape files going back to the 80's so I couldn't reproduce the analysis there. But you can again see at the ward level there's a cluster here, there's a Democratic cluster here, Menominee, the Lake Superior shoreline. But the rest of the state, there isn't a whole lot of red to draw upon when you're drawing your congressional districts.

JUDGE CRABB: Did you mean red?

MR. KEENAN: You said red. Do you mean blue?

THE WITNESS: Yeah, the rest of the state there's not a blue to draw upon. I'm sorry, Your Honor.

BY MR. KEENAN:

Q We do see a cluster of red there, correct, in the Waukesha area extending upwards; correct?

A Correct.

Q So is it your opinion that Republicans have no clusters in the State of Wisconsin?

A No, no, absolutely not. It's one of the more jarring things as an elections analyst how red the Milwaukee suburbs are. It's not something you really see outside of the south. I would love to know the reason for it, why Milwaukee suburbs are so red and Chicago's are more purple.

But setting that aside, the issue isn't so much that Republicans have a cluster and Democrats have a cluster,

it's that the rest of the state has -- now has a slight Republican lean to it. So what would have been swing or slightly Democratic-leaning districts in this area are going to tend to be more Republican.

Q If we could just go back to paragraph 84. We'll look at the 2012 map of the counties. The top one, sorry. Now, Wisconsin's counties have different populations; correct?

A That's right.

Q Okay. And does this map provide any sort of, like, numerical estimate as to what the precise level of concentration of Democrats is?

A No. I mean the county lines are stable over time so it allows you to make that sort of comparison. And you know that as the Democrats go into these counties, they're not getting wiped out of Wisconsin, they're just going into more heavily clustered urban areas. You can make maps that take account -- that distort the county lines to let you see the state as a whole. I don't think they're very useful because everything is so blurred that you can't make sense of heads or tails. But again, I don't doubt that the overall amount of red and blue in Wisconsin has stayed the same over this time period. In fact, that's the point. They have similar overall partisan indexes.

The point is that the blue has become more geographically concentrated, meaning that these wards that are the building blocks of the districts are bluer makes it harder to draw a bunch of Democratic districts.

Q Well then talking about Wisconsin, have you seen a similar trend like this in other areas of the country?

A Absolutely.

Q Can you provide some examples?

A Well, if we go back, I have some similar maps that I used for my books that I utilized here.

Q Maybe we could turn to paragraph --

A Paragraph 66.

Q -- 66, the maps.

A So this is one of the more fascinating maps that I came across when I was doing my book research. What this shows is the counties that Bill Clinton won in blue in 1996 and that Bob Dole won in red in 1996 and then compares it to Bush/Kerry and Obama -- Obama/McCain. And what makes the 1996 and 2004 comparisons so useful is that again, they're years where the president -- Democratic presidents were winning by roughly the same margin nationally. So you have a control in place. And what you see is that you really have the same national margin. Bill Clinton has a pretty wide geographic reach in this area.

Q Mr. Trende, can I just interrupt? What states does this map represent?

A So this is -- sorry. Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, Nevada and Kentucky.

Q Nevada? I'm sorry?

A Did I say Nevada? Tennessee, Kentucky. And so what we find is that Bill Clinton, when he runs for reelection -- and a lot of these -- back then a lot of these congressional districts are drawn by Democrats. They're meant to help Democrats. But he wins over -- he wins a majority of the congressional districts in the region and the Democrats are able to win half of the congressional districts.

Now, fast forward to 2008, and again, a lot of these lines are drawn by Democrats. Alabama was -- it's hard to believe today, but Alabama and Tennessee and Kentucky were Democratic gerrymanders. Louisiana and Arkansas as well. These are areas where Barack Obama only won about a quarter of the districts and that's part of why Democrats got wiped out in the region in the 2010 elections, because these districts that were conceived of originally as being kind of Democratic districts suddenly had become red because the Democrats' vote coalition had shrunk into these blue centers.

Q So you've referenced both counties and districts.

What do the maps represent?

A The maps represent counties.

Q And you've talked about some statistics with respect to counties. Where did you get that information? Or with respect to congressional districts, where do you get that information from?

A That's in paragraphs 67 and 68 and that was taken from *Almanac of American Politics*.

Q If we also look at paragraph 70. What do you see here?

A So this is Virginia. It's a state that Bill Clinton lost by, I think, six points in 1996 and Barack -- by two points, and Barack Obama, I think, won by six. And so again, similar national environment. The state as a whole swings towards the Democrats, which surprises no one who's followed Virginia politics over the past couple decades. But again, you see President Obama's coalition doesn't have the geographic reach that President Clinton had. I mean by this point you get Blacksburg, which is Virginia Tech. There's some African American counties here. Charlottesville. Henrico and Richmond. And then northern Virginia.

These are areas -- some of them, you know, Bill Clinton didn't win Fairfax County. Barack Obama did. But Barack Obama sacrifices the western portion of the

state, which was -- and southern portion of the state which was able to elect Democrats and keep them in power for the 80's and 90's suddenly becomes a lot redder and those areas have switched to Republicans.

Q And again, what would this analysis tell us about a party's ability to win legislative seats?

A It's very tough. I mean Democrats got to draw the Virginia State Senate in 2011. They tried their best, but they could only draw one seat advantage for themselves and that disappeared when a member from rural Virginia retired.

Q Now, you've read Professor Jackman's report; correct?

A Yes.

Q Now, how do you see in his historical analysis of that efficiency gaps over time?

A I haven't looked at that report in awhile.

Q You were here for his testimony yesterday; right?

A I wasn't.

Q Sorry. We'll skip that.

A Unfortunately.

Q Well, let's shift to the nearest neighbor analysis.

A Yes.

Q And we'll go to Exhibit 547. First we'll start at paragraph 93, which is a preclude to the nearest neighbor

analysis. Blow up the chart here. What were you doing with this part of your report?

A So the idea was okay, I think it's plain just looking at the map what's happened over time and given what we've known nationally, what happened to the Democratic coalition, it makes sense and I think it does a nice job of answering Dr. Jackman's question of why you see this efficiency gap starting to emerge in the 90's. Well, it's because the Democrats' coalition starts to shrink inwards and it's harder for them not to waste votes. But how do you -- what's another way to measure this?

Well, we can look and see are these wards actually becoming farther apart and there's this idea of nearest neighbor analysis that measures the distance between one group and the closest similarly situated group. Now, a lot of times when you do it, you'll use average nearest neighbor, but looking at the map of Wisconsin and knowing how these wards are utilized, I figured that a mean would be distorted by outliers.

The first week of statistics you go through mean, median, mode, the descriptor statistics. And what you learn is that if you have a skewed distribution, an average is difficult to work with. But the classic example is income distribution. If you look at the

United States income distribution, it shows the average income actually being pretty high. You say wow, I had no idea. Well, what's happening there? Well, Bill Gates's income and the tech billionaires out in Silicon Valley and billionaires in general exert a tremendous amount of pull on that average and distort the average. So what you almost always see reported is median household income. Because the way to keep those extremes from exerting pull on the average and pushing you back, and you can kind of see the distribution toward the center, say, how is the center really doing.

So since looking at the map of Wisconsin, I could see that the Democratic coalition, these places in Menominee County and Ashland County are probably going to match up somewhere in Milwaukee and skew the average. I said let's use the median instead, drawing on, again, the basic statistics that I learned.

Q And I think -- my mistake. You jumped ahead. I wanted to start here at 93, the partisan lean of the average Democratic lean. What were you doing here?

A So here when you're just looking at the -- you're not concerned about districts, you're just saying has -- you're asking yourself have wards in Wisconsin become more Democratic over time. So since we're not looking at distance, we're just looking at the overall distribution,

there was no reason not to utilize a median. And so what I did was I looked at the wards. I said okay, what's the average? How are these wards that have Democratic leans distributed and how are the wards that have Republican leans distributed? What I found was that over time, the average Democratic ward had become about two-and-a-half percent more Democratic than it was in 2002.

In 1995, I didn't quantify it because quite frankly I saw this weird uptick in 2014 that looked like an outlier and I didn't think it would be good.

Q Let's just --

A Okay. Let's just stick with --

Q Hold on. Can you explain what the vertical and horizontal axis mean on your chart here?

A Yeah. So the vertical -- in chart 93, the vertical axis is the average, and if it's negative, it's more Democratic; as it becomes positive it becomes increasingly Republican. And the horizontal axis, the x-axis is the year. And so that's what the axes mean.

Q Okay. Now, Professor Mayer criticized you for your selection in 2006. Do you recall some testimony about that?

A Yes.

Q Can you first explain which race you used in 2006 to establish the partisan lean?

A I used the Senate race in 2006, the Kohl, I think it was, Lorge Senate race.
Q And what were you using that for in terms of then looking at wards?
A So this is the partisan index of wards, so it's -- this is actually normalized for the statewide vote. You can't normalize for the national vote in off-year elections because there is no national vote. So it's normalized for statewide elections. So what you would do is you would say okay, Herb Kohl wins a precinct by 50 points or a ward by 50 points. He's winning statewide by 50 points. This is a swing precinct. Its overall Democratic lean is 0.
Q Okay. Now, what do you understand Professor Mayer's criticism of you to be?
A Professor Mayer said that I should have used the more competitive gubernatorial race, the Green/Doyle race in 2006.
Q Do you find this criticism valid?
A I don't.
Q Why not?
A Because you've normalized. This is exactly why you want to do that normalization for the statewide vote. Because what we find is that -- this is actually a wonderful example. Even comparing the 7-point

Green/Doyle race to the 50-point Lorge/Kohl race, the ward distribution just shifts up and down and so this ward, this hypothetical ward that was 50 percent Doyle -- 50 percent Kohl when he's winning 50 percent statewide would be 53 Doyle when he's winning 53 percent statewide. The distribution just shifts and it allows you to kind of compare even to widely disparate elections.

Q Now, this graph goes up in 2006?

A Yes.

Q Does that become more Democratic or less Democratic?

A So the average Democratic ward in 2006, it shows it becoming less Democratic.

Q Well, have you recalculated this number using the governor's race rather than the senator's race?

A I have.

MR. KEENAN: Okay. If we could put up Exhibit 578.

MR. HEBERT: And if I may object at this time, Your Honor. This is an exhibit that was prepared by Mr. Trende and we did -- as you know, the sequence here is that the plaintiffs did expert reports, the defendants then did expert reports, then we did rebuttal reports and then the depositions were taken of the experts. Mr. Trende has come up with this exhibit, which is kind of an amendment and correction to his report. They could

have sought leave to file a rebuttal report or a corrected report or an amended report and they failed to do so. I just want the record to reflect the objection of the plaintiffs to this.

MR. KEENAN: I just have to correct one thing there is that the timing of this was plaintiffs did experts, defendants did experts. Defendants' experts were deposed before the rebuttal reports and then there were the rebuttal reports.

Secondly, the plaintiffs have done this numerous times in this trial, so I don't see why there's a problem with the -- the plaintiffs have done it numerous times. I don't see how there could be a problem with the defendants doing it.

MR. POLAND: Your Honors, if I may address just that because it's not specific to this witness. There was a process that the Court put in place, and what the defendants have done so far with rebuttal testimony was pure rebuttal to what Mr. Keenan put on with Mr. Foltz in his examination, which was actually his case-in-chief. We did Mr. Foltz entirely during the plaintiffs' case-in-chief for the convenience of the parties and the Court. I think that's fine. But what Dr. Mayer came up with that was essentially new was truly rebuttal because it came up for the first time during Mr. Foltz's direct

examination by Mr. Keenan. So that was rebuttal. I think that the new things that we came up with yesterday that we sent to the Court were in response to the Court's questions. So I do want to just clarify that point.

JUDGE RIPPLE: We'll admit it subject to a later ruling after we've had a chance to examine the record and consult.

BY MR. KEENAN:

Q Okay. This is 578. What do we see here on the left -- we see the year on the far left. But then in the middle column what does that show?

A That's the average -- the dot that you see in paragraph 93 for 2006, the value of that dot is 7.5 percent on the old calculation. And so if I were to use the gubernatorial race, I don't concede this as an error, but if you prefer to use the gubernatorial race this year, the average D precinct would be 9.8 percent. So there would still be a bump there. It would be less of a bump.

But that's kind of what's amazing. I was pleasantly surprised it worked out this well. By normalizing for the statewide vote, even in these two radically different elections the average precinct doesn't change that much. It still has a Democratic -- the average Democratic precinct has a Democratic lean of about, you know, 8

percent or 10 percent.

Q Okay. And was there also an error with respect to your 2014 numbers?

A Now that was a genuine error. When you're doing this in R, you're essentially writing a computer program, and as I was writing the program to calculate the vote share and then subtract out the map share, you have to keep going like year 2002, duh, duh, duh, subtract map 2002 and then the two-party vote calculation.

For 2014, I think Dr. Mayer actually includes the code that was written. I subtracted out the 2012 map. It's a mistake.

Q Okay. But have you accounted for that?

A Yeah. So actually if you use the proper 2014 map normalization, it actually makes things a little worse for plaintiffs. This was an error in plaintiffs' favor. In fact, when you compare 2014 to 2002, and this kind of gets a little bit to Judge Griesbach's objection about trying to compare gubernatorial race over time to gubernatorial race over time, not any of the national stuff. In 2014, the average Democratic precinct under the old calculations was two-and-a-half percent more Democratic than it had been in 2002. When I recalculated in 2014, the average Democratic precinct is actually almost 3 percent more Democratic in 2014 than it was in

2012.

So over time -- it's still the case over time the average Democratic precinct has become more Democratic.

Q Okay. Did you perform a similar analysis on Republican wards?

A I did.

Q Okay. What did you find with respect to Republican wards?

A So I didn't quantify the change for Republican wards because I saw the 2014 uptick and that looks like an outlier. So all I said was we don't have a similar effect for Republican wards. We don't see a three-point shift over time and --

Q Let's -- sorry. Let's go to Exhibit 547. Paragraph 95.

MR. KEENAN: Sorry, let's go down. There's a similar graph of the Republicans.

Q First, why don't you just -- let's explain the x- and y-axis and everything that's here.

A This is the same chart for Republicans. You have year on the horizontal axis, you have the average Republican ward on the vertical axis, the y-axis, and you see it kind of shifting over time but not dramatically.

Q So we see 0 at the top and 15 at the bottom.

A So 0 --

Q What is positive -- what does getting bigger mean in this sense?

A So 0 would be the average Republican ward was actually neutral. Obviously it's not going to be that. And 15 would be the average Republican ward was 15 points more Republican than the state as a whole in a given year.

Q So the further down a dot is on this -- in this graph shows more Republican ward?

A That's right. I wanted it to kind of move in tandem with the Democratic scaling above. So you can argue for scaling it either way. I like this way.

Q All right. So you mention something about this uptick at 2014. What is that showing?

A It shows that in 2014, the average Republican ward suddenly shifts and becomes more Democratic, becomes neutral, and I thought that looks odd. So again, I didn't quantify the shift. Now I know why it looks odd.

MR. KEENAN: So let's put up Exhibit 579.

Q First, did the errors or the error in 2014 that we talked about on the Democratic side, did that apply to your Republican analysis?

A Right. 2006 and 2014, those objections were raised.

Q Okay. So then what change do you see when you corrected the numbers here?

A Well again, in 2006 you see almost no change when you exchange from the Kohl -- when you change from Kohl/Lorge to Green/Doyle. It's actually six-tenths of a point when you round it. I think it rounded out for some reason to seven-tenths. So almost no change, even comparing these widely disparate races. That's the value of doing the normalization.

Now, when you change 2014, you get rid of that uptick and so it does a little more what you would have expected it to do. But still the change in the average Republican precinct from 2002 to 2014 is just 1.1 percent. It's a third of the change we saw in the average Democratic precinct. So the average Democratic precinct becomes three times as much more Democratic as the average Republican precinct over this time period.

Q What was the average Republican precinct in 2002?

A 11 percent more Republican in the state as a whole.

Q And then what do we see in 2010?

A 2010 it's 11 percent again.

Q And 2012?

A 12.1 percent.

Q And your corrected number here for 2014 is?

A Oh, 2012. I'm sorry. That was eleven-and-a-half and the corrected for 2014 is 12.1.

Q Okay. All right. Now, let's go to the nearest

neighbor analysis. Can you explain what you were trying to do there?

A Sorry, I got a little ahead of myself in explaining what the nearest neighbor analysis was. So this told me how things changed over time and it kind of validated what we had seen on the maps in the county level, that these Democratic areas became a lot more Democratic and the Republican areas kind of spread out. Well, what I wanted to then say is okay, over time let's bring the geography in. Over time, do we see the heavily Democratic areas becoming more clustered? And the same thing with the Republican areas, do they show a similar degree of clustering.

So what I used was a median nearest neighbor analysis. I think I explained why I used a median rather than a mean, an average at this point. And what this analysis does, it's a computer program and it will take, you know, ward A in Menominee, it will look at its partisan lean and then it will find the closest precinct that has a similar partisan lean. And then it will take ward B and do a similar thing and record it. And it will do that for all 6,600 counties. It will make what we call an i-by-j matrix. It's going to be a 6,600-by-6,600 ward matrix, and it will record all of the average -- all the distances ward to ward. It will find the closest

neighbor for each ward and then it will take the median of that. So we can see as a general matter how far apart are the Democratic wards and how far apart are the Republican wards.

Q You mentioned wards of similar partisanship. Could you explain, like, how you group the wards?

A So I grouped -- we did the normalization. We turned it into partisan index and then we grouped them into quantiles, which is the decimal expression of percentiles. So 0 to 3 percent quantiles is a grouping, 3 percent to 6 percent, 6 percent to 9 percent. I would have loved to have done it more granular than that, but the computer would have none of it because you're doing a million calculations already for each year.

So it allows you then to -- as you do those quantile groupings and you compare them over time, this is obvious from the R code, it gives you the distance.

Q Okay. If we could pull up --

A Oh, I'm sorry. On the group, we excluded -- the defendants excluded .45 to .55 because those are even parts and indexes. So those are things in the middle. They don't really -- they aren't really Democratic wards or Republican wards, those are swing wards. So we excluded those from the analyses.

MR. KEENAN: If we could go to Exhibit 547,

paragraph 99. And we'll look at the top graph here.

Q First, let's just set out what this is with the vertical axis/horizontal axis.

A Right. So this is the x-axis or the horizontal axis is the quantile. So the .05 is the 5 percent most Democratic wards and so forth and you can see the little circles represent quantile calculations. The vertical axis or the y-axis is the median nearest neighbor distance in miles for that quantile, and then we sorted them by years.

Q Okay. So what do we see on this graph in terms of the distances?

A Well, we see sort of what we expected given what we saw on the maps and from our analysis when we looked at the maps of the wards in other counties. If you look at the 2004 and 2002, those wards -- I guess there's two things you notice. First, those wards are farther apart than the 2014 wards. So that tells you that over this time period, the Democratic wards in each quantile grew closer together. What we also see is that as you go over quantile, so going from left to right, as the wards become more Republican, they become spread further out. So not only is the most heavily Democratic ward closer -- group of wards closer together than the most heavily Republican or Republican-leaning Democratic wards or the

swing-year Democratic wards, I guess, but over the years they have become closer together.

Q If we could pull up Exhibit 114, which is Professor Mayer's rebuttal report. Professor Mayer has a criticism of you that your analysis doesn't take account for the fact that wards have varying sizes across the State of Wisconsin. Do you understand that?

A I do understand that.

Q Okay. How would you respond to that criticism?

A Well, I think that's part of the problem; right? I mean the Democratic -- the ward sizes correlate with urban areas and by saying that the Democrats are in these small wards, he's proven the point. The Democrats are in these core urban areas. You can't spread out and draw Republican-leaning districts.

Q We've put up on the screen Exhibit 114, page nine, Table A. This is Professor Mayer's calculation of the size of the wards in the state. What does this show you?

A Well again, the City of Milwaukee wards are very small. I agree. And the rest of the state has larger wards. Again, I agree. The problem is the Democrats are in these very small wards and have been increasingly in these very small wards, which makes it harder to draw a smaller precinct.

The other thing that I think is important is that

Dr. Mayer does a lot with 2012. He isn't looking at so much over the change over time. And why that's crucial is that these wards are consistent over a decade. Okay? And so if you see a change in the distances over the course of a decade, which we do see, and these wards are held stable, you can't explain change with a constant. These ward sizes are constant, yet we still see the Democrats' distances shrinking. And so it has to be something other than ward sizes. It's the fact that the Democrats are coming inwards, because again, these are constants, so you can't explain the change with the constant.

Q And how does smaller distances between wards relate to legislative districting?

A Well again, if you have these heavily Democratic wards packed together in the Democratic cities, you get this natural packing that occurs in the state. And so if all your vote or most of your vote goes into Milwaukee and Dane Counties, Milwaukee and Dane Counties are only entitled to a certain number of districts and Milwaukee and Dane Counties were leaning Democratic to begin with, so the Democrats were already doing quite well in those districts. It becomes harder -- it becomes progressively harder to draw Democratic precinct -- Democratic districts elsewhere in the state.

Q You mentioned there was a change over time within consistent wards. How do we see that on this graph here?
A Well again, you can see the 2008 ward right here in the middle, that line is lower than 2006 and 2004 and 2002. 2010 is lower than 2008. So again, these were drawn with wards of the same size. You have these ward sizes held constant and yet nevertheless you see things -- you see the distances between Democratic wards shrinking. You can't explain that with ward sizes.
Q Let's move down the page. Did you have a similar analysis with respect to the Republican wards?
A Yes.
Q Okay. And can you explain what this graph shows here in paragraph 98 of your report?
A So this is the similar effect for Republicans or the similar analysis for Republicans. On the y-axis as we move rightward, the quantiles become increasingly swingy, I guess, to use a nonacademic term. If you go on the y-axis, the vertical axis, the distances grow larger.
Q Okay. And so what do we see here as we move from heavily Republican over to, like, more Democratic or less Republican wards?
A It's actually the opposite of what we see with the Democrats. As you become -- as you get to these heavily Republican wards, they become farther apart. And it's

not just that as you go from here to here they become farther apart, but as you go from year to year, they become progressively farther apart. So over the course of this time period, even similarly situated quantiles for Republicans have grown farther apart.

JUDGE CRABB: I have a question.

THE WITNESS: Yes, Your Honor.

JUDGE CRABB: You said that the Democrats are clustered into cities and as more and more of them come in, there are going to be more and more in the district and you can't increase the districts. But you're not saying that -- say two million people moved into Dane County. You're not suggesting that the number of districts in Dane County would still be the same.

THE WITNESS: Oh, no, Your Honor.

JUDGE CRABB: What are you saying?

THE WITNESS: Yes, Your Honor. Actually during a redistricting period they would be the same. If two million people moved into Dane County from 2002 to 2010, it would be the same. We still see that changing. There would be more districts put into Dane County. I don't know how many districts Dane County was entitled to in 2012 versus 2002. What I do know is that Democrats were winning those districts in Dane County to begin with, so those votes that they get in, you're right, don't go into

an additional Assembly district or Senate district are basically naturally wasted votes because a district that's giving 60 percent of the vote to Democrats by the end of the decade is giving 70 percent of the vote to Democrats. So that's a natural waste.

JUDGE CRABB: When the new districting process takes effect and, say, you have a lot of western states, you have 50 or 60 percent of your population is living in urban areas.

THE WITNESS: Yes, Your Honor.

JUDGE CRABB: So how do you account, if you say a county can have only so many districts, how do you account for that?

THE WITNESS: Well, it's not -- in between redistricting years there can be a change. If you're looking at some place -- Milwaukee County is a better example where you don't have a population explosion. I was pleasantly surprised riding around Dane County yesterday how much new construction there is. It would still be a problem for the Democrats there.

Now, that might be, as Dr. Jackman said, an area for additional inquiry. But this is something that plaintiffs aren't accounting for. We know that there's this clustering and that the efficiency gap, ultimately this is a question about the utilization of the

efficiency gap. We know there's this clustering that's occurring or I think it's obvious there's this clustering occurring in Dane and Milwaukee County. Maybe it would be explained away by additional Assembly districts coming into these counties. But it's something that a measure of gerrymandering is going to have to account for and the efficiency gap just doesn't.

JUDGE CRABB: I thought the idea of redistricting was to try to eliminate the variances in districts. So you have a district that may be huge, but it has approximately the same number of people as this tiny city district in which people are in high rises and whatever.

THE WITNESS: I understand the point. This isn't just about people moving, it's about vote preferences changing over time. Now, it's -- it is a perfect -- I understand your point. It's a well --

JUDGE CRABB: I don't understand --

THE WITNESS: That's fair. So there's two things: First, it doesn't necessarily have to be two million people moving into Dane County to get this change in the --

JUDGE CRABB: I understand that. My question is your testimony seemed to indicate that there's nothing we can do. A lot of people move into one area. They're all

one party. There's nothing we can do about it. But my understanding of redistricting is that's when you try to do something about that so the districts are relatively the same number.

THE WITNESS: Yes, Your Honor.

JUDGE CRABB: Okay. So if you're up in Shullsburg, you may be in a district that's geographically huge, but you're going to be a district that has approximately the same number of people as of the date of redistricting as this little tiny area in Milwaukee or Madison.

THE WITNESS: Well, there's two answers. The first is I'm not sure -- my answer isn't that people are moving in and that's -- the Democrats move in to Dane County and that's what makes it more Democratic. I mean I suppose that's a hypothetical possibility. It's also vote preference is changing. The same people who live here change --

JUDGE CRABB: Of course.

THE WITNESS: -- their votes, so that would not affect the distribution of the Assembly or Senate districts. If people change their vote preferences, there are still a similar number of people living in the geographic area.

Now, people can also move in which would entitle an

area, as you say, to more Assembly districts. That's something -- the straightest answer is that is something that this analysis doesn't account for that could explain it away. I would love to see the data on it.

JUDGE CRABB: Okay.

BY MR. KEENAN:

Q Professor Mayer criticizes you for using the median distance rather than the mean. Why did you choose to use the median?

A Well again, as I said, the first week of statistics you're taught the difference between median, mean, mode, standard deviation, variance, the general descriptive statistics. The problem with using a mean is that outliers exert influence on it.

I use the example of income distribution. The few high income individuals skew the average income in the United States. They typically use a median. And you see the same thing in Wisconsin. There are -- when you look at the map, there are these clusters of Democrats across the state and so when you're pairing up something in Ashland County, there aren't a whole lot of other Democratic precincts around Ashland County that could easily match up with something in Menominee or Milwaukee or Dane, which is going to give you a longer distance than -- it's kind of a outlaying distance. So instead of

average, I took the mean.

Q This is Exhibit 114, Professor Mayer's amended rebuttal report. This is page ten, Figure B, which he went over on his examination which shows his recalculation of your analysis but using the mean or the -- yes, the mean instead of the median. Could you explain what this shows?

A So what Professor Mayer has done is taken -- replicated my analysis of median and then all -- for one year, and then also done a similar -- and then done a similar analysis using the mean nearest neighbor.

Q And what do you think that Professor Mayer's reconstruction of your analysis using the mean shows?

A Well, what you see is that even the average Republican ward is further apart than the average Democratic ward. It shifts things upward. It shifts things upward a lot by -- for the Democrats, which I think reflects the pull that the outliers have when you do an average as opposed to a median. But I also noticed that this isn't -- this might capture the shape in one year, but there's no analysis over time, which is what I do in my charts. I'm not looking at one year and seeing how the distribution changes, I'm seeing those distributions change from 2002 to 2014. They shifted downward for Republicans and upwards for Democrats, and

Dr. Mayer doesn't capture that in this chart.

Q Just to use this, what do you think this uptick here you reference, what does that show?

A Well, it shows that the average Republican ward is a lot further apart than the median Republican ward, which is probably the influence of outliers. And the average Democratic ward is a lot further apart than the median Democratic ward. Again, you probably have the influence of outliers there.

Q All right.

MR. KEENAN: If we could put up Exhibit 576. All right.

Q This is a map. Could you explain what this map shows?

MR. HEBERT: For the record, let me object to this. I think this is one of your new exhibits?

MR. KEENAN: Right. So if you want to make your record.

MR. HEBERT: The same objection as earlier. And I also object to the form of the question. He just puts up a map and says what does this show. It would be good to know who did it and what, you know --

BY MR. KEENAN:

Q What is this map?

A This is a map that I did, drawing upon the same data

that I used to generate the ward map of Wisconsin. And what this is is it's filtering out the top 10 percent Democrat-lean precincts or wards in 2012.

Q And so what do you see when you look at this map showing the top 10 percent of Democratic wards?

A Well, this is what I'm talking about with the influence of outliers. So you have this extreme cluster of Democratic wards down in Milwaukee, the 10 percent heaviest Democratic wards in the state. You have this cluster in Madison, in Dane County. But when you're doing this nearest neighbor analysis, these wards in Ashland, Superior, Bayfield are going to have to get paired with something else. And so it's going to tend to get paired across like this. Maybe you get lucky and it pairs with, you know, a ward there or something in Menominee, but you have this potential for a skewed distribution, and I was taught when you have the potential for a skewed distribution, you use a median rather than a mean.

MR. KEENAN: Let's put up 577. This is a similar exhibit that was produced today, so I'll allow --

JUDGE RIPPLE: So noted.

BY MR. KEENAN:

Q Then can you explain what this map is?

A So this is the same analysis that I made coming from

the chart of the ward-level map that's in my report, paragraph 87, except it's filtered for the 10 percent most Republican wards in the state. And so, you know, there's a similar risk of outliers. It's not as dramatic as it is for Democrats because the distribution isn't quite as bunched up in a few different places. I'm having a fun time with this screen, I apologize. But there's still a potential for outliers, not as dramatic as with the Democrats, but again, median rather than mean.

Q Okay.

A If you don't have a skewed distribution, the median and mean should be more or less the same. So it only should make a difference if there's some outlying leverage exerted.

Q All right. We can take that exhibit down. You understand this case is about the efficiency gap; correct?

A That's right.

Q Do you have any opinions about whether the efficiency gap -- about the use of the efficiency gap to measure partisan gerrymandering?

A I think the efficiency gap is interesting. I read -- I really enjoyed this. It's cool stuff. But I don't think -- I think the efficiency gap tells us a lot about

wasted votes and a lot about the efficiency gap itself. I don't think it tells us much about gerrymandering. I think the real problem is the linkage between the efficiency gap and gerrymandering. It might be part of an explanation, but it can't be -- maybe, but that's tough to say.

Q And why do you say that?

A Well, there's a couple reasons. But the biggest reason is that it's underinclusive and it's overinclusive. And what I mean by that, and this is part 3 -- parts 3 through 6 of my report, but underinclusivity and overinclusivity in part 3 is if you look at maps that just about everyone has agreed is a partisan gerrymander, there's a lot of them that the efficiency gap won't trigger scrutiny of. And if you look at maps that are plainly not partisan gerrymanders, the 1992 and 2002 Wisconsin maps that were drawn by a court, some of the maps that are drawn in Iowa by dependent redistricting commissions, maps in New York that are drawn by Democrats that nevertheless put out huge Republican efficiency gaps, these show efficiency gaps going the opposite way of what you would expect. So it ignores maps that we -- I think you would find everyone agreeing is a gerrymander, and it brings into its ambit maps that I think it's very hard to claim are gerrymanders.

MR. KEENAN: Let's focus on the underinclusive aspect here. If we could go to paragraph 117 of Exhibit 547. Okay. If we could blow up this map of Georgia here.

Q What does this map represent?

A So this is the -- this is a map that I drew. I actually have drawn hand maps of every district going back to 1789 because I wanted to learn about how congressional districts were being drawn and how the parties have done gerrymandering over time. Even at times when they were required to follow county lines, they actually gerrymandered William McKinley out of his district in 1890 by drawing it from down into Canton into Holmes County. You don't actually know that until you actually draw the map and see what they did.

Anyway, this is Georgia in 2002. It's a map that was drawn by Democrats and virtually everyone agrees that this was an aggressive Democrat gerrymander that was intended to produce in a five-Democratic delegation in what was at the time a Republican-leaning state.

Q Is this a map of congressional districts or state legislative districts?

A This is congressional districts.

Q And so what does this map show then, if we can just look at a few of the districts.

A Sure. So you have this 13th district that kind of looks like -- it's been described as a sick chicken. You kind of have the head there, some legs there, a tail there that kind of wraps around Georgia -- around Atlanta. It's an African American plurality district, it's not a majority district. You do have African American majority districts in the 4th and the 5th.

You have, say, the 11th district out here, which actually starts up here, runs down. It runs down -- it runs down the west Georgia border. It has -- all you're missing there is a tongue in here, and there's another tongue in there. There's actually -- the hope was to draw a Democrat district, but it didn't work. The technical term for this is a dummy mander.

Q So what happened under elections in this plan?

A It actually elected a lot of Republicans.

Q And have you analyzed what it showed up in terms of being an efficiency gap measure?

A So this district -- this map, that everyone agrees is a Democratic gerrymander, and not just comply with racial terms, you have the 11th and you have the 12th, which is also not of the area district, it has a Republican efficiency gap of .01 -- I guess negative .01.

Q What does that tell you about using the efficiency gap to measure gerrymandering?

A It gets -- it's not just whether it's a gerrymander, it gets the sign wrong on this. This says it's a Republican-leaning map that the Republicans drew.

Q Okay. Now, you understand that the Stephanopoulos and McGhee article that's the basis for the efficiency gap suggest a different standard for using congressional districts versus state legislative districts; is that correct?

A That's right.

Q Okay. Do you think that -- how does that affect your analysis of using the efficiency gap to judge gerrymandering?

A Well, I thought I heard Dr. Mayer testify that for gerrymandering there's no difference between congressional districts and state legislative districts. So I don't know why you would utilize a different test. Maybe I misheard.

The other thing is that even if you have a different test, if it's, you know, plus or minus .07 percent for legislative districts and then two seats for congressional districts, the efficiency gap calculation is the same and so at the very least you would hope that Democratic-drawn gerrymanders would show Democratic efficiency gaps, which doesn't happen. This is a Republican efficiency gap map.

Q If we could go to paragraph 120, we'll look at another map. What does this map show?

A So this is the North Carolina -- and, of course, in the report there's a lot of other examples of this. But these maps are just, you know, really, I think, striking. This was a -- everyone agrees this is a Democratic gerrymander in North Carolina in 2002. It was a more successful gerrymander than the Georgia map in that it eventually got rid of Robin Hayes in the 8th District, it protected Mike McIntyre in the 7th District.

You can see this district right here is not a voting rights district. The 2nd, it's been described as a dragon in flight. You have the wings, you have the head, you have the tail. And it's meant to elect a Democrat. And yet in the 2002 election it presents with a marginal Republican lean. The efficiency gap is negative 2.6 or 2.6 using Dr. Mayer's convention.

Q There's been some testimony about criticisms you had about imputation methods. Do you recall Professor Mayer had some response to criticism he thought you made? Have you made any criticism of Professor Mayer's imputation methods?

A No.

Q Can you explain what the criticism you actually were making was?

A Well, if you go to paragraph 132, if we can go there in my report, the point I'm making is Dr. Jackman's imputation strategy is problematic. Now, this is what I think Dr. Jackman's imputation strategy is. We didn't get the entire code until Friday, so I haven't been able to work through it. But from what I understood, he was taking votes from -- presidential votes from Assembly districts and imputing them to Assembly votes where he didn't have contested races. And it would make sense you would try to do that. And what I said was the only way that Dr. Mayer's approach ties into this in paragraph 136, I say in and of itself it's not a problem if the imputation strategy is correct.

But what Dr. Mayer shows on his thing, on his chart is a line that represents a one-to-one ratio. So I knew -- I mean I say right here it's not a best-fit line. I know he's not drawing a regression-analysis line. It's a 45-degree line as he described in his testimony. And there's a dropoff in votes. And so if you're imputing presidential votes to Assembly districts, you're going to impute too many votes in districts that don't have Assembly races because there's a dropoff in them.

I don't talk about Dr. Jackman -- Dr. Mayer's regression analysis. I frankly don't know what his criticism was referring to.

Q All right. We'll just get into the rest of your report. We're coming to the end here so we can -- do you have any opinions on things that the efficiency gap metric ignores?

A Well again, this gets into No. 5, and Dr. Mayer interpreted this as being a criticism of him, but actually I think it's -- I agree with him. It's a compliment for him. I think he misread the report. When Dr. Mayer runs his efficiency gap analyses, he finds that a number of things affect the efficiency gap. So incumbency, candidate quality, campaign spending, recruiting advantages, those last two are in the literature, not in Dr. Mayer's report. But one of the problems with the simplified efficiency gap, Dr. Jackman's approach to the efficiency gap is that it doesn't take account of any of these things. And since we know that -- and the fact that Dr. Mayer actually takes account of these things when classifying his -- when doing his revised efficiency gap calculations proves my point that if you just take the simple -- because we know that incumbency and candidate quality of these things can change votes and change the efficiency gap somewhat, the fact that the simple equation .5 S minus, et cetera, et cetera doesn't take any of this into accounts. It's missing things that can alter the

efficiency gap.

Q And then do you have any opinions about the efficiency gap sensitivity to changes?

A Well, yes. You can see I ran through an example, in point heading 6 of situations -- of a situation where if you just made a slight change in the state vote share and did a uniform swing, you could produce a big change in the efficiency gap. Now, I'm not saying this is what happened in Wisconsin. I'm just saying that if this is the national standard that's set up, you can have situations where efficiency gaps are just kind of determined by the roll of the dice of what kind of year the redistricting plus two, if you will, is, the 2002/2012 is.

If it's a good Democratic year and a map that's allocated like this chart, you're going to have a different efficiency gap than if it happens to be a bad Democratic year. That make it is a little bit arbitrary.

Q I'm sorry, you had referenced a chart. We'll put it up here on paragraph 153. Could you just explain what this is?

A Yeah. So in this chart here if everyone votes as expects, you get a negative .06 efficiency gap. So this is kind of a neutral year where the percentages reflect what the data have suggested or your regression analysis

or however you calculate it.

Q Just to stop. So we have a series of the districts. How many districts?

A There's 20 districts.

Q What do the columns represent?

A So this is just saying hypothetically if you estimate going into redistricting, that District 1 will give 10 percent to the Democrat and 90 to the Republican and so forth and so on. And District 20 would give 90 percent to the Democrat and 10 percent to the Republican. If everyone votes as expected, you do your efficiency gap analysis, you get a negative .06 efficiency gap.

But let's say that the first year actually turns out to be a Republican wave year and Republicans fair two points better across the board. So the district they expected to be 90 percent Republican is 92 percent Republican, and District 12 that you expect to be 51 percent Democrat/49 percent Republican becomes 49 Democrat and 51 Republican. You do that across the board. You get a negative 1.9 efficiency gap. And so whether or not court scrutiny is triggered is subject to the vagaries of the National Election Cycle. If it's a wave year, you get a different answer than if it's a neutral year.

MR. KEENAN: We're going to put up Professor

Jackman's report, it's Exhibit 34. And Jackie, what's the table there? It's page 55, Table 1.

Q And just as we get -- move along, this is the list of the 17 unambiguous -- plans that are unambiguous as to the sign of their efficiency gap.

A Right.

Q And did you do some analysis of these 17 plans?

A Yes. So these plans I do some analysis of them actually in my report at paragraph 109. And what's interesting is that these unambiguous plans, only 7 of these 17 states were drawn in situations where there was unified partisan control.

Ohio in 1992 has a partisan board, so that's not what the legislative breakdown would show. And there's just some interesting, just anomalous things. For example, New York. Plan 3. 1992. The convention in New York is that the Republicans draw the state Senate districts because they control the state Senate and the Democrats draw the Assembly districts. Okay. The Democrats have drawn the Assembly districts since 1982 and yet they always show these massive pro-Republican efficiency gaps. Okay? So part of that is just the concentration of New York City. You've got to draw a lot of heavily Democratic districts in New York City.

What's also interesting is that these heavily

Republican efficiency gaps continue to produce overwhelming Republican majorities in the Legislature. So there's not even a linkage between partisan control and the efficiency gap.

Q You said they produce Republican --

A Democratic majorities in the Legislature. So there's not even a linkage between partisan control and efficiency gaps.

Q All right. And then have you done an analysis about whether the efficiency gap might stay the same sign but the control of the Legislature still changes hands?

A Yes. So that's at the very tail end of my report, point heading 6. And you can see an example, for example, map 1, you can keep this chart up, map one in New York. Actually the Republicans, it's hard to believe today, but they had control of redistricting in 1972. They had the governorship in both Houses of the Legislature. They drew a map with a heavy Republican efficiency gap, and yet there's this radical shift over the decade from Republican control to Democratic control. So Democrats were not locked out of the Legislature.

And you can go through, the 2002 map here is counted as a Republican gerrymander. The Democrats win the state House in 2006 and 2008. The Wisconsin 2002 map is a -- supposed to be Republican gerrymander, yet Democrats were

able to win control of the Assembly in 2008 as a court-drawn map, of course.

California's 1992 map is counted as a Republican gerrymander even though it's a court-drawn map. And yet Democrats managed to win unified control of the Legislature in '96, '98 and 2000. So we just don't see the sort of linkage we would expect to see between the efficiency gap and partisan control if the efficiency gap were really a good measurement of gerrymandering.

MR. KEENAN: I have no further questions.

JUDGE RIPPLE: I think then this would be a very good time for us to take a 15-minute break prior to the cross-examination by the plaintiffs. So the Court will stand in recess for 15 minutes.

(Recess 10:35-10:55 a.m.)

THE CLERK: This Honorable Court is again in session. Please be seated and come to order.

JUDGE RIPPLE: I think we're ready then for the plaintiffs' cross-examination of the witness.

MR. HEBERT: Thank you, Your Honor. Again, with the Court's permission, I'll stay seated for the cross.

CROSS-EXAMINATION

BY MR. HEBERT:

Q Let's start, Mr. Trende, with a comment you made on direct examination in response to a question about

Dr. Jackman's imputation strategy is problematic. Do you remember that testimony?

A Yes.

Q And your report is Plaintiffs' Exhibit 126 and one of the comments that you made on direct, if I understood you correctly, is that you really couldn't tell what the problem was because you didn't get the R codes until last Friday; is that correct? The statistical problem.

A I wouldn't phrase it quite like that. What my point was was I think I know how Dr. Jackman was doing it. I wasn't entirely sure because I didn't have the entire R code to go through. I couldn't make the R code work without some of the files until -- I didn't get them until Friday.

Q Okay. So you couldn't tell what the actual problem was? Is that what you're saying?

A If Dr. Jackman did his imputation the way that I believe he did it, then there's a problem. If he did it otherwise, then it's not a problem. But I did it to the best of my ability given the data that I had.

Q But you couldn't tell because you didn't have the R code; correct?

A I couldn't be completely certain how he did it because I didn't have the code.

MR. HEBERT: And let the record show, Your

Honors, that the R code that Dr. Jackman had was given to the defendants last November, not last Friday. So the record is clear on that point.

THE WITNESS: We got additional files Friday.

MR. HEBERT: Excuse me, sir. I'm still speaking. And perhaps Mr. Keenan will stipulate to that.

MR. KEENAN: I'll stipulate that we had a version of the R code that didn't have some underlying files that Mr. Trende needed. Those files were given to us first last Friday. That's what Mr. Trende was trying to say.

MR. HEBERT: Thank you. The stipulation I was looking for was that the database that Dr. Jackman had was given to them last --

MR. KEENAN: That's not correct, so I'm not going to stipulate to it.

MR. HEBERT: All right. Well, we'll move on.

JUDGE RIPPLE: Maybe the two of you could work out a stipulation that you could agree to. I think there is room for you to do that. So we'll defer ruling on that and let you try.

MR. HEBERT: We'll confer. Thank you, Your Honor.

BY MR. HEBERT:

Q So let's start at the beginning, Mr. Trende. You

testified, I believe, on direct that you had testified in a case in North Carolina challenging a series of voting rights laws, a case called *NAACP v. McCrory*; correct?

A That's correct.

Q All right. And that was not a redistricting case; right?

A That was not.

Q And you testified for the state of North Carolina in that case?

A That's correct.

Q And they were defending against a Voting Rights Act challenge to a variety of voting rights laws?

A That's correct.

Q All right. Now, you testified also in a case out of Ohio I believe you said?

A Yes.

Q All right. And that case was also a case brought challenging some closing of early voting sites under the Voting Rights Act?

A No.

Q What was the subject of that lawsuit?

A It had to do with the number of days of early voting.

Q Days of early voting. Thank you. And again, that was a Voting Rights Act challenge to those -- that

reduction?
A I think that's right.
Q And the plaintiffs recently prevailed in that case, did they not?
A On one of the counts.
Q All right. And you testified for the state of Ohio in that case?
A I did.
Q Okay. And you also mentioned that you testified in a state court litigation involving redistricting in North Carolina; correct?
A I didn't testify. It was done on the papers.
Q I see. And I believe you said that your expert report was actually, and I wrote it down, received without objection I believe you said?
A That's correct.
Q Isn't it true that the state of North Carolina simply attached your report to the motion for summary judgment and there was never a trial in that case?
A I don't know.
Q So you didn't testify at trial, did you?
A No. It was done on the papers.
Q Okay. And so do you know whether your report in that case was offered into evidence at the trial?
A It was part of the record that was accepted in the

federal court version of that, so I assume it is in the record as evidence but...

Q Wouldn't a document attached to a motion for summary judgment be part of the record?

A I don't know.

Q You don't know whether a motion -- you're an attorney; correct?

A I practiced in 2009. I'm assuming the entire record was transferred, but I didn't see it.

Q And you don't know sitting here today whether your report was accepted into evidence in the trial court in the North Carolina redistricting litigation, do you?

A The state or federal?

Q The state.

A My understanding is that it was accepted without objection.

Q All right.

A As relayed to me by the attorney.

Q Now, in the North Carolina case, the *NAACP v. McCrory* case, you testified at trial and characterized yourself as a psephologist; correct?

A Yes.

Q And you testified, I believe, that psephology involved election predictions?

A It's a study of campaigns and elections.

Q Okay. Now, are there any peer-reviewed journals for psephology?

A Campaigns and elections are studied by political scientists, but there's no journal of psephology just like there's no journal of redistricting.

Q So there's no specifically dedicated journal to psephology. You would agree with me on that?

A I would agree with you on that.

Q Okay. Have you ever written an article that was published in a peer-reviewed publication?

A No.

Q Have you ever written about partisan gerrymandering in any peer-reviewed publication?

A No.

Q Can you get a degree in psephology from any university in the United States?

A You can certainly study campaigns and elections as part of a degree in political science, but no, you can't get a degree in psephology.

Q Now, prior to your work on this case, you had never done or studied any writings related to legislative -- state legislative districts in Wisconsin; correct?

A I think that's right.

Q Okay. And prior to your work on this case, you had never done any study or writing about geographic

locations of Democratic or Republican voters in Wisconsin; isn't that true?

A I think that's right.

Q Okay. Now, you do not have a Ph.D.; correct?

A Not yet.

Q Your master's thesis that you wrote was on the Supreme Court; correct?

A That's correct.

Q And it was not on partisan gerrymandering.

A That's correct.

Q It was not on elections.

A No.

Q It was not on geographic clustering.

A It was not.

Q It was not on state legislative redistricting.

A It was not.

Q Your master's thesis hasn't been published anywhere, has it?

A I haven't tried. It has not.

Q Have you ever taught any undergraduate- or graduate-level classes on statistics or statistical methods?

A I have not.

Q Have you ever taught any undergraduate or graduate classes on election analysis?

A I have not taught any classes.
Q Okay. Now, you would agree as a general matter that Professor Simon Jackman has greater expertise in statistical analysis than you do, wouldn't you?
A As a general matter, yes.
Q Now, online articles at Real Clear Politics, they're not peer reviewed like political science journals are, are they?
A Oh, no.
Q Now, you've described in your deposition that Real Clear Politics online articles are aimed at a lay audience; correct?
A That's right.
Q Real Clear Politics doesn't have a separate page that's summarizes the outcomes of state legislative races, does it?
A That's correct.
Q Isn't it true that your main focus at Real Clear Politics when you're writing tends to be on federal races, presidential, congressionals, U.S. Senate?
A That's correct.
Q Not -- state legislatives races is not your focus, is it?
A That's not the major focus.
Q Now, you have never been retained by any state or

local government to actually draw a redistricting map, have you?

A That's correct.

Q Now, you said in your report, your exhibit, Plaintiffs' Exhibit 126, that you used Adobe Illustrator to draw complete maps of every congressional district ever drawn I believe; is that correct?

A That's correct.

Q All right. But Adobe Illustrator doesn't contain GIS data or shape files, does it?

A No. I based it -- I took the data at the back of Kenneth Martis's Atlas of American Congressional Districts where he gives the line-by-line description of the districts and drew it based on those. And it gives the counties and you weren't allowed to split counties in most states until 1964 or so.

Q So you just took that information and just put it into Adobe and drew the map?

A You draw it by map effectively.

Q I see. So you didn't use GIS data to draw those maps.

A No. This wasn't an electronic process or something that was auto generated, these were drawn by hand so you could actually learn the geography and how the maps were drawn.

Q Have you ever used Geographic Information System software to draw a redistricting map?

A I have not.

Q Isn't it true you haven't done that because it's too expensive you said to buy?

A That's my understanding.

Q Now, Judge Crabb asked you some questions about drawing districts when a whole bunch of people move into a particular county. Do you remember that exchange with the Court?

A I do.

Q Now, isn't it true, if you know, that when you draw redistricting plans, that the first and major priority is to equalize the population of the districts because that's a constitutional requirement?

A In the state legislation you have some wiggle room, but yes.

Q And the wiggle room is plus or minus 5 percent or an overall deviation of 10 percent. That's the wiggle room you're talking about?

A I think that's right, yes.

Q Now, in your report in this case you did not draw any conclusions, did you, about how you could draw districts in Wisconsin given the alleged clustering of Democratic and Republican voters that you claim exist in

the state; correct?

A Can you repeat that question?

MR. HEBERT: Would you read it back for me, please?

(Pending question read back)

A So I made general claims that it becomes more difficult to draw maps for Democrats as Democrats become more clustered. But I didn't engage in the sort of analysis that Dr. Mayer engages in, if that's the thrust of your question.

Q No. Let me see if I can do a better job of asking. You did not actually set out to try to figure out, notwithstanding the alleged clustering of voters that you claim exist, how you could draw districts in a different way.

A Exactly. I didn't do the sorts of analyses that Dr. Mayer did. I didn't draw any actual districts.

Q Now, in your report in this case, Exhibit 126, you did not do any analysis of any kind to determine how much of Wisconsin's efficiency gap is due to alleged concentration of Democratic voters in Wisconsin; correct?

A That's correct.

Q So you don't know sitting here today what percent of the efficiency gap under Wisconsin's current map is due to the concentration of Democratic voters in Wisconsin;

correct?
A That's correct.
Q Now, you've never done any work to determine how much of the current map's efficiency gap is due to intentional gerrymandering, have you?
A That's correct.
Q You've never done any work to determine how much of the efficiency gap is due to the natural clustering of Democratic voters.
A That's correct. At least doing a formal -- I think it's more than 0, but as far as doing a formal putting it on the 1-to-100 percent spectrum, I haven't done that.
Q So again, you don't know if 10 percent or 1 percent of the efficiency gap under Wisconsin's current map is due to the concentration of Democratic voters in the state?
A Or 100 percent. It's very difficult to tease out.
Q You can't determine with any precision; correct?
A That's correct.
Q You've never done any analysis to determine how much of any other measure of partisan symmetry -- and here I'm using terms like partisan bias or mean/median difference or whatever the other measures of partisan symmetry are -- you've never done any analysis to determine how much of any other measures of partisan symmetry is due to

alleged clustering of Democrats in Wisconsin; correct?
A That's a lot in that question, but I think the answer is no, I haven't done it.
Q If you didn't understand it, I'll repeat it for you.
A I haven't done a direct analysis of any other metric of partisan symmetry besides the efficiency gap.
Q Okay. Now, do you believe that the current Wisconsin map for the Assembly was drawn by Republicans with a partisan intent?
A I haven't engaged in that analysis. I would guess since there was uniform control there was some partisan intent. It's just trying to quantify it is very difficult.
Q Do you know, in fact, that the congressional map in Wisconsin was drawn with partisan intent?
A Again, I would suspect that there was some partisan intent involved. I mean the districts are largely reflective of districts that have been in Wisconsin since it lost a seat, I think, in 2000. But -- and -- but I don't doubt that there was some work done on the lines to shore up Republicans in Obey's district, for example.
Q Now, you gave a deposition in this case, and when you were asked about that question, you, in fact, stated that you knew that partisan intent played a role in the congressional redistricting; correct?

A Like I said, I don't doubt that there was some measure of intent in there. It's also -- they also do -- the districts do reflect longstanding maps. There's been a northwestern Wisconsin district for a very long time and there still is one.

Q How did you know that partisan intent played a role in developing and enacting the congressional map in Wisconsin?

A That just stems from having followed the redistricting closely. I didn't interview anyone or anything of that nature.

Q Now, in your report in paragraph 66 to 70 --

MR. HEBERT: And again, for the record your report is Plaintiffs' 126.

Q -- you showed a map of Virginia, the west and southwest, central regions of the state in those paragraphs; correct?

A Which paragraph are we in?

Q Let's look at your report, paragraph 66 to 70.

A Okay.

Q And in those paragraphs you looked -- 66 you talked about -- let's see. Number 70. Let's focus on 70.

A Okay.

Q In paragraph 70 you talk about Virginia and focused on the west/southwest/central region of Virginia;

correct?
A Correct.
Q And you used that to discuss maps of counties that were won by the presidential candidate in '96, '04, and '08; correct?
A That's right.
Q All right. You could have done more states than just Virginia; correct?
A That's correct.
Q Why did you just limit it to Virginia?
A Well, I didn't. There's the map in paragraph 66 that includes eight additional states. I think it's eight. So that's nine. I took these maps because I'm under a budget and these were maps I had already done for my book.
Q So you felt it was more efficient use of your time.
A It was an efficient use of my time and it made the point that I thought needed to be made.
Q Now, you did an analysis of geography clustering of Democrats and Republican voters by looking at trends in counties using presidential vote shares; correct?
A Are we still talking about these maps?
Q Yes, we are.
A Yes.
Q And that would hold true for the Texas, Arkansas,

Louisiana, Tennessee, Kentucky, Alabama, Mississippi maps you also depicted?

A Yeah. Let's call it the west/south/central region.

Q Isn't it true that there's not a single peer-reviewed study that has analyzed geographic clustering of Democratic and Republican voters by examining trends in counties won by each political party's presidential candidate?

A I don't know whether that's true or false, but I think it makes the point pretty clearly.

Q All right. So you don't know one way or the other?

A That's right. I don't know whether anyone has ever done this.

MR. HEBERT: Could we bring up Exhibit 128 at page 51, which is your deposition, sir. Lines 6 through 11.

Q You were asked the following question:

"Question: Can you identify any peer-reviewed studies that have analyzed the geographic clustering of Democratic and Republican voters by examining trends in counties won by each parties' presidential candidate?"

And what answer did you give, sir?

A "No, I can't identify them." I still can't identify them. I don't know one way or the other.

JUDGE RIPPLE: Excuse me, Counsel. What page of

the deposition were you on?

MR. HEBERT: That was page 51. I'm sorry, Your Honor?

JUDGE RIPPLE: Thank you.

BY MR. HEBERT:

Q So essentially was it you who came up with the idea and thought it would be good to analyze geographic clustering of Democratic voters in this way?

A Yes.

Q And you weren't writing for a litigation audience when you did that, were you?

A These maps?

Q Yes.

A No.

Q So you don't know whether other political scientists might have methodological problems if they looked at your maps and your analysis --

A Well --

Q -- do you?

A -- having read the reply briefs, there's at least one. But at the time that I did the maps, no.

Q Now, in each of these maps with the county numbers on them, county shadings, you don't display any margin of victory or quantitative indication, do you?

A That's right.

Q All right. And the reason you didn't do that was because it's time consuming?

A Yes. These are coded by hand. It takes a long time to recode these.

Q You didn't take into account the population for each county in the maps you presented for your regional maps as well as your Wisconsin maps because you don't know how to do that, do you?

A Oh, I'm sure I could figure it out in R. There's an R package for everything. I just don't think those maps are particularly useful.

Q All right. Let's turn -- same exhibit, which is 128 at page 53, lines 17 to 24.

A Where are we? I'm sorry.

Q You're going to see your deposition coming up on the screen.

A Gotcha.

Q Page 53, line 17 to 24. You were asked the following question:

"Question: Why didn't you take into account the population of each county in the maps you presented?"

And would you read your answer, please.

A "I don't know how I would do that. I guess I could. There's a map type that skews the size of the counties. I'm blanking on the term for it, but I find that most

people" -- most people -- that's a garbled sentence. "I find that most people -- I find that for most people are not particularly useful because you lose sight of what it is you're usually looking at. So I'm sure I could figure out how to do it. There's a R package for everything. But I don't know how to do it as I'm sitting here."

Same answer.

Q Now, before your deposition in this case you had never heard of an analysis called *Global Moran's I*?

A That's correct.

Q And before your deposition or before your appearance in this case, you had never heard of the isolation index; correct?

A That's correct.

Q Now, are you aware of the fact, sir, that these are two of the most widely used measures of spatial concentration in social science?

A I couldn't testify to that one way or the other.

Q Because you don't know; is that correct?

A I have never done any measurement of that sort.

Q I'm not asking you whether you did any measurement. You don't know whether it is in the literature the most common widely used measure.

A Right. I've never done a measurement of how commonly used the test is, so I don't know the answer to

it.

Q Now, you used the partisan vote index to study state legislative districts; correct?

A Correct.

Q And sitting here today, you can't name a single peer-reviewed article that has used a partisan vote index to study or describe state legislative districting?

A That's correct.

Q Isn't it true that there are no peer-reviewed studies that analyze the geographic clustering of Democratic and Republican voters by looking at trends in county partisan indices?

A It's the same as before. There may be, but I can't identify any.

Q Sitting here today you can't; correct?

A Same answer. Yes, that's correct.

Q Now, in your report, Plaintiffs' Exhibit 126, at paragraph 25 --

MR. HEBERT: Could you turn to that, please.

Q Now, in this paragraph you indicate that a "simple visual inspection," and I want to put those in quotes -- that you use the "simple visual inspection" to evaluate your county partisan index maps; correct?

A Yes.

Q Okay. Now, you testified in your deposition, in

fact, that a court could just look at the map and see the clustering; correct?

A I think these maps are stark enough that yes, it's fairly obvious.

Q And you testified that a court could just look at a map and see the clustering; correct?

A As I said, I think the maps are stark enough that it's fairly obvious to a court.

Q The court could look at it and they would know it when they see it; correct?

A I wouldn't have used those terms, but I think you -- if those are the terms that plaintiffs want to use, I don't think -- it's not necessarily I'll know when I see it, but it's there in these maps. I'm not going to argue with you about -- if we wanted to use an analogy, there's a point at which stubble becomes a beard. I don't know exactly where that is, but I still know what a beard is and what clean shaven is.

Q Because you know it when you see it?

A There might be close enough -- there might be close-enough calls where you wouldn't know it. I don't know what the test would be there, but in Wisconsin it's obvious from looking at the maps.

Q When you say it's obvious, you mean by a simple visual inspection?

A Simple visual inspection of the maps.
Q Let's refer to that for a few minutes as the eyeball test. Okay? So --
A I'll call it a visual inspection, you can call it an eyeball test.
Q Okay. Well, my question is -- they mean the same thing in these questions, okay?
A Fair enough.
Q Is the eyeball test that you proposed here the subject of any peer-reviewed literature?
A I don't know if any peer-reviewed literature has relied on an inspection of maps, although I would guess that they have used maps in this manner in the past. But I don't know.
Q You don't know sitting here today; correct?
A That's correct.
Q Do you know -- you would agree with me though that the eyeball test or the simple visual inspection test does not incorporate a statistically valid metric; correct?
A I think there may be cases where you wouldn't want to do it from a visual inspection where it's hard to tell. But I think there are cases where it's stark enough as in Wisconsin that you can look at the maps and see exactly what's going on.

Q Well, in order to actually evaluate the specifics of clustering, would you not need to calculate something involving numbers?

A And I do calculate things involving numbers to validate what we see. But --

Q But the conclusion -- I'm sorry.

A But again, I think in this instance what you see on the maps is stark enough that it's obviously valid.

Q So your conclusion about the clustering is that it's based on looking at the maps; correct?

A Yes. If you have a state -- you can look at a partisan map of the United States in 1996 when West Virginia went for Bill Clinton by 13 points and it's blue and then look at it today when it went for Mitt Romney by 20 points and it's red. And just by looking at the colors on the maps, you can say yes, the state changed dramatically. There are instances where it's so dramatic that I think you can just look at a map and determine what's going on, and this is one of them.

Q So let's pull up the map that follows paragraph 84 of your report, your report again, Exhibit 126. At the map at the top that is entitled *Wisconsin County PI 2012*.

A Yes, sir.

Q Do you see that? Now, there are about ten or so adjacent red counties in the southeast corner of the

state?
A That's correct.
Q But you can't identify any clusters of ten very blue counties anywhere in the state, can you?
A No. That's actually a problem for Democrats.
Q So let's look at paragraph 87. Again, the map here, this is the 2012 ward map; correct?
A That's correct.
Q And what would you say is the largest single partisan cluster in Wisconsin? Is it the suburban area around Milwaukee?
A Yes.
Q Now, is that bigger than the cluster around Dane and La Crosse Counties or would you have to measure it?
A I'd say it's bigger because you do get some white in the middle here.
Q But without measuring it, it's hard to say if it is the largest. Would you agree with that?
A I don't think it's that hard to say actually looking at it.
Q All right. Let's pull up page 65 of your deposition. Line 18.
MR. HEBERT: This is Exhibit 128 for the record, Your Honors. Trende deposition.
JUDGE RIPPLE: So noted.

BY MR. HEBERT:

Q Page 65, line 18. And this is going to continue to spill over to page 66, line 2.

"Question: Looking at the 2012 ward map that goes with paragraph 87, what would you say is the largest single partisan cluster in Wisconsin?

"Answer: Well, there's a large partisan cluster in the southeast in the Republican suburbs."

I've read that correctly?

A Yes.

Q Can you move on to the next -- top of the next page. "And that's the largest partisan cluster in this state?" you were asked. And your answer was "Without measuring it, it's hard to say, but I think it's probably larger than the cluster that's in the southwest around Dane and La Crosse."

You gave that answer; correct?

A Correct.

Q So you did indicate that without measuring it, it would be hard to say which cluster was largest.

A Yes.

Q Okay. Now, in paragraph 89 of your report, you refer to an article by Chen and Rodden. Do you see that?

A Yes.

Q Okay. Now -- and then you present a chart from Chen

and Rodden's article claiming that the chart shows that there's Democratic clustering; correct?

A I show a chart that shows the relationship between Bush's vote share and population density.

Q Are you looking at the chart --

A Yes.

Q -- at the very top of -- above paragraph 90?

A Yes.

Q Okay. So does that show -- and you have each state there represented -- I know it's a little hard to read.

MR. HEBERT: Can we blow up Wisconsin perhaps?

Q So do you claim that that chart shows Democratic clustering?

A It shows that as the -- as you get into more urban areas, the Democrats become stronger and in the less urban areas there's less Democratic vote totals.

Q Are you aware that Professor Chen has done an analysis for Wisconsin finding there's no Republican clustering in the state?

A I heard the testimony from Dr. Mayer.

Q Were you aware of it until you heard that?

A I know that there was an amicus brief filed as well that I didn't read.

Q And did -- are you aware of the fact that Professor Chen actually drew hundreds of maps that complied with

traditional redistricting principles?

MR. KEENAN: I'm going to object to the line of questioning. He said he didn't read the report and this report is like -- it was denied entry by the Court and so I don't understand what this line of questioning goes to. If they wanted to hire Chen as an expert, they could have hired him and submitted a report which Mr. Trende could have responded to, but they didn't do that.

MR. HEBERT: I'll rephrase the question. I think I can clear this up.

JUDGE RIPPLE: Try to do that.

BY MR. HEBERT:

Q So you haven't read Chen's article; correct?

A That's correct.

Q Okay. And you haven't read the --

MR. KEENAN: Object. I'm sorry, which article?

MR. HEBERT: Okay. This is the article that I was referencing I thought you objected to.

MR. KEENAN: Well, that's not an article. That was a report filed with the Court.

MR. HEBERT: This is an article, Your Honors, that's Exhibit 156. It is a forthcoming article in the *Election Law Journal*, a peer-reviewed journal by Professor Chen, and it was identified in Professor Mayer's testimony. It's also publicly available on

Professor Chen's website.

JUDGE RIPPLE: The Court will accept it subject to a future ruling.

BY MR. HEBERT:

Q So since you haven't read it and you haven't read the amicus brief that was submitted, I believe, on his behalf, you're not aware about any contention by Professor Chen that it's possible to draw hundreds of maps that comply with traditional redistricting principles but have a much smaller efficiency gap than the current plan? You're unaware of that?

A Beyond what Dr. Mayer testified to, I don't know anything about this article or this -- I guess it's a working paper. There will be an article.

Q I'm sorry, I didn't hear that.

A I guess it's a working paper. That will be an article when it's published.

Q Now, you also performed an analysis that you called the *nearest neighbor analysis*; correct?

A I called it *median nearest neighbor*, yes.

Q I'm sorry, you call it median nearest neighbor?

A Correct.

Q Okay. Sorry. I thought you had the term nearest neighbor in there. How did you determine which wards lean Democratic and which ones leaned Republican? Did

you look at the partisan index in the state for that?
A That's my recollection, yes.
Q Now, you remember that Mr. Keenan, counsel for the state, was asking you questions about your median neighbor analysis; correct?
A Yes.
Q And you testified that wards are held constant within a decade; correct?
A I believe that's correct.
Q But Wisconsin's wards were redrawn prior to the 2012 and 2014 elections; correct?
A That's correct.
Q All right. So Wisconsin's wards were not constant over the entire time period that you studied; correct?
A That's correct.
Q All right. And you didn't make any adjustments for the new ward boundaries in 2012 or 2014, did you?
A That's correct.
Q So you don't know how your results would change, if at all, if you had actually kept the ward lines constant in your analysis; correct?
A That's correct.
Q Now, you did not take ward size into account in your median neighbor analysis; correct?
A Not directly, no.

Q And you're aware that Wisconsin wards vary widely in size; correct?
A Correct.
Q You didn't do any analysis to determine that Republican wards are systematically larger than Democratic wards?
A I didn't do any analysis along those lines, no.
Q So this means that in your analysis, Democrat wards will always be closer to each other than Republican wards, whether it's because they're clustered or because it's a function of the ward area; correct?
A Well, that's part of the problem is that they're clustered into these tiny precincts in the city which makes it harder to draw districts for them. And of course I also look at change over time, which matters. But no, I didn't directly do the analysis you're talking about.
Q Okay.

MR. HEBERT: May I have a moment, Your Honor?

JUDGE RIPPLE: Please.

BY MR. HEBERT:
Q Now, in your report you discussed a set of 17 plans in Professor Jackman's original report that are "utterly unambiguous with respect to the sign of the efficiency gap estimates recorded over the life of the plan."

Do you remember that?

A Where are we?

Q I'm sorry. In your report, you actually discuss the set -- this was questions from Mr. Keenan. He asked you about the set of utterly ambiguous -- paragraph 109 I think of your report there was a table?

A And I'm not trying to slow things down. You had a quote and I wanted to make sure that --

JUDGE RIPPLE: Let's let the witness focus on the paragraph.

MR. KEENAN: I believe it's utterly unambiguous as to sign. I think you said ambiguous.

MR. HEBERT: Must be my pronunciation. Sorry.

THE WITNESS: I see unambiguous history. Maybe the utterly is in there, but I don't see it.

BY MR. HEBERT:

Q Now, that's Professor Jackman's original report that uses the unambiguous language; correct?

A I believe that's right.

Q Now, in his report you realize that that's a set of plans for which the probability, according to Professor Jackman, that the efficiency gap has the same sign over the life of the plan is 100 percent; correct?

A That's correct.

Q And it's also true that Professor Jackman never

states that those plans were enacted with discriminatory intent, does he?

A I don't believe he does, but I think that's still a problem with the test is a national test.

Q Now, he never states that these plans, Professor Jackman that is, never states in his analysis that these plans exceeded any efficiency gap threshold in the first election, does he?

A I don't recall that.

Q And do you know whether Professor Jackman never states that these plan -- these efficiency gaps can't be justified by legitimate considerations?

A Oh, they may well be, but half of the plans that are unambiguous I think are patently justifiable and so it just makes me question the utility of the metric if half of what it finds have unambiguous efficiency gaps are pretty clearly not gerrymanders.

Q Let me see if I can focus my question a little better. Professor Jackman in his report never stated that the plan's efficiency gaps can't be justified by legitimate considerations, does he?

A No, because I think there's a missing nexus -- this illustrates what I think is a missing nexus between the efficiency gap and gerrymandering.

Q I understand your position. I just asked whether he

did or not. Now, isn't it true that Professor Jackman never uses the term gerrymander or gerrymandering with reference to these 17 plans?

A I have -- I don't know whether that's true.

MR. HEBERT: And Your Honor, the record on that will show Professor Jackman's report, which is Exhibit 34 at paragraph 53.

JUDGE RIPPLE: So noted.

MR. HEBERT: I'll now move on.

BY MR. HEBERT:

Q Now in your report, Exhibit 126, Plaintiffs' exhibit, you refer to these 17 plans as states that would be included in the definition of a gerrymander, don't you? It's paragraph 109.

A Correct.

Q And in paragraph 110 you refer to this set of plans as a list of gerrymandered districts, don't you?

A Gerrymander states.

Q Gerrymander states. I'm sorry. Correct. And you also refer in paragraph 111 that these plans, you refer to them as "poor candidates for gerrymanderers"; don't you?

A At least as commonly understood, yes.

Q And you also refer to these plans in paragraph 114 of Exhibit 126 as potential gerrymanders, don't you?

A Correct.
Q Now, Professor Jackman's reports in this case address only state House plans across the country; correct?
A Correct.
Q And Professor Mayer's reports in this case address only Wisconsin state House plans; correct? Not congressional plans?
A Correct.
Q And in paragraphs 115 to 124 of your report, Exhibit 126, you only discuss in those paragraphs congressional maps; correct?
A That's correct.
Q And in fact, in those paragraphs you discuss ten separate congressional maps and not a single state House plan; correct?
A I will accept that there's ten.
Q Okay. Now, you're familiar with -- I believe you testified that you're familiar and have read the Stephanopoulos and McGhee article?
A Yes.
Q Okay.
MR. HEBERT: That's Exhibit 141, Your Honor. And I have a series of questions about that. It's actually the quote, for the record, is page 868 that I'll

be referring to here.

Q Now in that article it states "We considered congressional plans only for states that had at least eight districts at some point during this period because redistricting in smaller states has only a minor influence on the national balance of power."

Correct?

A I'll accept your characterization.

Q But in paragraph 115 of your report, you discuss Alabama's plan which had only seven congressional districts; correct? Less than the eight threshold that they mentioned in their article.

A That's correct.

Q Okay. And in paragraphs 116 and 122, you discuss Colorado's 2010 plan which both had only seven congressional districts; correct?

A That's correct.

Q And in paragraph 119, in discussing Iowa's map, they only had five districts in Iowa; correct?

A In 2002, yeah.

Q Okay. Now, in that same article Stephanopoulos and McGhee write "We report the efficiency gap --

MR. HEBERT: And again, this is at 868 to 869.

Q "We report the efficiency gap in seats for congressional plans and in seat shares for state House

plans."

You don't disagree with that, correct, that that's what the article states?

A I'll assume that you're reading it correctly, yes.

Q And they also stated that what matters in congressional plans is their impact on the total number of seats held by each party at the national level; correct? You don't disagree with that? You don't disagree that that's what the article says?

A I see that here in the call out, yes.

Q Conversely state Houses -- this was continuing on with the article, "State Houses are self-contained bodies of varying sizes for which seat shares reveal the scale of a parties' advantage and enable temporal and spatial comparability." Correct? That's what the article says?

A Correct.

Q And then they also write, and I believe this is on page 887, that "We recommend setting the bar at two seats for congressional plans."

A Correct.

Q Are you reading that? Okay. Now, in paragraphs 115 to 124 of your report, Exhibit 126, you don't report efficiency gaps in terms of actual seats; correct?

A No.

Q You report it only in percentage points; correct?

A That's right. So if the Court were to adopt a different standard for states and congressional seats, then it wouldn't look at the negative .07 to .07 cutoff, although the signs are often going differently than you would expect as well.

Q Let's look at the math for a minute, Mr. Trende. Let's start with your statement in paragraph 115 that Alabama's congressional plan had an efficiency gap of minus 12.5 percent in 2002. Do you see that?

A Yes.

Q Now, if you multiplied that by the seven congressional seats, do you know what that would translate into for an efficiency gap? Do you have your calculator with you?

A We'll call it less than a seat.

Q 0.9 seats.

A That sounds right, although the sign is still going the opposite way of what you would expect.

Q But that's below the Stephanopoulos and McGhee's two-seat threshold, isn't it?

A It's below the two-seat threshold, but it's still showing an obvious Democratic gerrymander as having a Republican gap.

Q Let's take another state. We won't belabor this, but let's take one more state. Colorado, paragraphs 116

and 122 of your report.

A That's right.

Q And you report that Colorado's plans had an efficiency gap of minus 9 percent in 2002 and minus 9.9 percent in 2012? This is paragraph 116 and 122, sir.

A Oh, 122, yes.

Q Do you agree?

A Yes.

Q Now, multiplied by Colorado's seven congressional seats, those would translate into efficiency gaps of minus 0.6 seats and minus 0.7 seats; correct?

A Right. So if you had -- if you utilized a different test for congressional districts and state House districts, these wouldn't invite court scrutiny, although you still have Democrat gerrymanders that are showing Republican efficiency gaps.

Q We could repeat this exercise for all of the other congressional efficiency gaps in your reports, paragraphs 115 to 124. For example, in Georgia if we did the same calculation, we would come out with minus 0.1 seats, Illinois minus 1.7 seats, Iowa minus 1.0, North Carolina minus 0.3, Arizona 1.4, Illinois 1.0 in 2012, and Pennsylvania in 2006 and 2008 minus 4 percent -- I'm sorry -- minus 0.8 seats in '06 and plus 0.6 seats in 2008. You wouldn't disagree with those numbers as they

would come out based on the calculation we've been employing; correct?

A It doesn't, but I think in at least one instance here it's a little misleading because in paragraph 123, for Illinois in 2011 my point is actually that everyone agrees that's a Democrat gerrymander, yet it doesn't trigger court scrutiny. So the fact that it doesn't trigger court scrutiny under the seats metric either doesn't change the analysis.

Q When you say *court scrutiny*, do you mean in the legal sense?

A As I understand it, if it's a two-seat standard, Illinois would not meet that standard in 2011 whether you're using the seat standard or the .07/07 cutoff, and that's a problem.

Q So, in fact, sitting here today, you can't identify a single congressional efficiency gap in any of those paragraphs, 115 to 24, that exceeds the two-seat threshold when it's converted from percentage points to seats; correct?

A But that's a problem because a lot of these are obvious gerrymanders. It's the -- you're proving that the metric is underinclusive.

Q But none of those states that we just mentioned, if you could answer my question, none of those sitting here

today, you can't identify a single efficiency gap that exceeds the two-seat threshold identified by Stephanopoulos and McGhee; is that correct?

A The answer is that's correct and that's a problem. You're proving my point that the efficiency gap is underinclusive because these should be gerrymanders. Everyone agrees they're gerrymanders. They're obvious gerrymanders. Even the *Veith v. Jubelier* map, which the Supreme Court said was written as it was partisan redistricting plan, doesn't come out as gerrymander under your standard.

In 2008, the efficiency gap points the wrong way. It points as if it has a Republican lean. That's the problem with the efficiency gap as a national standard.

Q In the Stephanopoulos and McGhee article, Exhibit 141, they constructed models to estimate party vote shares in uncontested districts, didn't they?

A That's correct.

Q And in this case Professor Jackman also constructed models to estimate party's vote shares in uncontested districts, didn't he?

A That's my understanding.

Q And Professor Mayer similarly constructed a model to estimate the party's actual votes in uncontested districts; correct?

A They did.
Q Okay. Now, when you were faced with uncontested congressional districts, you didn't create any kind of a model, did you?
A I used presidential vote shares. I would have liked to have used Dr. Jackman's metric. But again, I didn't get the files I needed to make the R code work until Friday.
Q Well, this is congressional we're talking about.
A Oh, I know.
Q Okay. You literally just took the districts' presidential vote shares and just plugged them in; correct?
A That's right.
Q You didn't make any adjustment whatsoever to the presidential vote shares before using them to calculate efficiency gaps, did you?
A Correct.
Q Now, it's true, isn't it, that there can be voter roll off from presidential to the congressional level?
A That's right.
Q It's also true voters might have different presidential and congressional preferences. You might vote for one party for president and a different party candidate for congressional; correct?

A It's much less common today than in the past. I think the plaintiffs' reports demonstrate that. But yes, it's possible.

Q Now, political scientists -- tell me if you can answer this question. Maybe not. Political scientists take presidential results and use them as the input to a regression model that predicts the outcome of uncontested congressional races; correct?

A Yes.

Q Okay. Indeed in the political science literature that's the preferred approach; correct?

A Yes.

Q And that was the approach employed by Professor Jackman in his report, Exhibit 34; correct?

A That's correct.

Q But presidential results simply can't be plugged in without making any adjustments, can they?

A I don't know. As I said at the time when I was writing this, I thought that maybe what Dr. Jackman was doing was plugging them in because I didn't have the data to replicate it and I didn't think it was obvious from his report.

Q But you just agreed with me, I thought, that he used the presidential results as an input to create a regression model that predicted the outcome of

uncontested congressional races.

A That was my understanding after the deposition and after receiving the dataset on Friday and doing some exploration through it.

Q Presidential results simply can't be plugged in without making any adjustments, but that's exactly what you did; correct?

A I don't know whether they can't be directly plugged in. I know that's not what Dr. Jackman did.

Q So -- now this may take a few minutes. Let me see if I can find the exhibits and everything and go through this. But Mr. Trende, you remember that Mr. Keenan walked you through a lengthy series of PVI calculations?

A That's correct.

Q You'll need your computer for this so you may want to pull that out.

MR. HEBERT: If we could pull up paragraph 281, the stipulated facts in the joint pretrial report. I'm not going to go through the long slog. And I am winding down, for the Court's information.

MR. KEENAN: What paragraph?

MR. HEBERT: 281. Paragraph 281, please. May I approach the paper on the side, Your Honors?

JUDGE RIPPLE: Yes.

MR. HEBERT: Your Honor, I've asked my

co-counsel to stay there so I don't have to come back and forth and maybe speed this up a little bit, with the Court's permission.

BY MR. HEBERT:

Q So can you write -- can you tell us, Mr. Trende, what you calculated for Dane and Milwaukee Counties, the PVI's that you calculated for those two counties in the most recent presidential election 2012? That's the year we're going to focus on.

A So I hope you'll correct me if I'm wrong because this isn't the most organized table I made, but I believe 2012, Dane County, was D plus 20.1 and Milwaukee was D plus 16.

Q Correct. Okay. So let's write Dane plus 20.1 or 20.1 percent and Milwaukee you said 16.3 percent, I think?

A Sure. Yes. I jotted down 16, but I'll accept 16.3.

Q Now, can you calculate the 2012 PVI for Ozaukee County? And Ms. Harless will write it on the board for us.

A So you take 19,159 and you divide by 55,236, and so President Obama won 34.6 percent of the vote in Ozaukee. And then you subtract out his national vote total of 51.96 and it comes out to R plus 17, I believe. We can say 17.3.

Q 17.3. Correct. Exactly. Now, can you calculate the 2012 PVI for Washington County and write it on the board -- we'll have her write it on the board.

A So you take President Obama received 23,166 and you divide it by the total two-party vote of 77,931 and you come up with President Obama winning 29.7, et cetera, percent of the vote and you subtract out .5196. And I believe that would be then R plus 22.2?

Q Correct.

MS. HARLESS: Say it again.

THE WITNESS: 22.2.

BY MR. HEBERT:

Q And now the last one I want you to calculate is the 2012 PVI for Waukesha County.

MR. HEBERT: And though I'm not from Wisconsin, I hope the Court appreciates I've worked hard on my pronunciation of those counties.

A Always seems to be at the enter of things in this state. 241 -- so you divide 78,779 by 241,577 and you come up with President Obama winning 32.6 percent of the vote. You subtract out again 51.96 and you come up with PVI Republican 19.3.

Q Correct. So looking at this chart that we have here, it's true, isn't it, that in 2012, Washington County had the largest PVI of this set of five counties;

correct?

A This set of five, yes.

Q And it was a pro-Republican PVI; correct?

A Correct.

Q And it's also correct, isn't it, that in 2012 Ozaukee and Waukesha Counties had larger PVI's than Milwaukee County; correct?

A Yes.

Q And that these PVI's were pro-Republican.

A That's correct.

Q Now, one final question.

MR. HEBERT: We're going to mark that as the next exhibit, which is Plaintiffs' Exhibit 497, Your Honors. And we'll put a sticker on that, take a picture of it so we have it electronically, and we will move that into evidence at the appropriate time.

Q One final question, sir. You're being paid $300 an hour for your testimony; correct?

A That's correct.

MR. HEBERT: Thank you. No further questions.

JUDGE RIPPLE: Thank you, Counsel. (11:52 a.m.)

MR. KEENAN: I have some redirect and then I think for just housekeeping I should formally move, although I understand there will be objections to the exhibits, formally move into evidence Exhibit 547,

Mr. Trende's report; Exhibits 576 and 577, those were the maps of the highest 10 percent Democrat and highest 10 percent Republican wards; and Exhibits 578 and 579 were the revised tables calculating the average partisan lean of wards for both parties. We've discussed these before, I just hadn't formally moved them in.

MR. HEBERT: And those are the ones, Your Honor, we've objected to and they're largely incorporated also by the *Daubert* motion as well as the cross-examination today.

JUDGE RIPPLE: That is correct, and they will be decided in due course.

REDIRECT EXAMINATION

BY MR. KEENAN:

Q I'm just going to take off from this here. Can you start a running tally here? How many -- what's the total votes that were cast in Waukesha in 2012 election, the two-party vote total in the column? We're on paragraph --

A 281. Can you bring the exhibit back up?

Q This is the stipulated facts and we're in paragraph 281, the long table. Let's go down to Waukesha at the bottom. It's like two pages down. What's the total vote, the two-party vote total there?

A Waukesha is 241,577.

Q Why don't you write that down on your paper. We're going to do some addition here.
A Got it.
Q What is Washington County's two-party vote total?
A Washington is 77,931.
Q And then let's move up a page to Ozaukee. I was not originally from here, now I am, so I know how to pronounce them. What's the vote total in Ozaukee County?
A 55,236.
Q Can you add those all together?
A I come up with 374,744.
Q Okay. Now let's shift to the Democratic side. Can you go up to the Milwaukee County total votes? What's that?
A Milwaukee County is 487,362.
Q Then can you -- we'll go up a page to Dane County. What's the two-party vote total there?
A 299,715.
Q And when you add those two together, what do you get, Dane and Milwaukee?
A 787,077.
Q And then what do you get for the three Republican Counties?
A It was 374,744.
Q Let's do it again. Let's add just the Democratic

vote totals in Dane and Milwaukee; not the two-party, just the Democrat votes.

A So 216,071 plus 332,438 and you come up with 548 -- or I come up 548,509 votes.

Q Then why don't you add the Republican votes that are in Ozaukee, Washington and Waukesha Counties.

A So Ozaukee is for Republicans 36,077, plus crucial Waukesha County 162,798, plus Washington County 54,765, you come up with 253,640.

Q So that shows there's more than twice as many Democratic votes in Madison and Milwaukee than in all three of those Republican counties?

A That's correct.

Q Okay. Let's move on. You were asked some questions about your qualifications and you said you don't have a Ph.D. yet. What were you referring to there?

A I'm enrolled in Ohio State University's political science Ph.D. program.

Q Have you started your classes yet?

A I have not.

Q When are you going to start?

A In the fall.

Q When would you expect to complete that program?

A Hopefully in four years.

Q Why did you decide to get your Ph.D.?

A Just because the field of election analysis, especially online, is becoming more Ph.D. heavy. We're getting people like Dr. Jackman working with pollsters. So Real Clear Politics thought to keep up we would need to have some Ph.D -- I'm also getting as part of the program a master's in applied statistics.

Q And what do you intend to do after you get your Ph.D.? Are you going to do any sort of different work?

A I'm going to continue to write for Real Clear Politics.

Q Now, Real Clear Politics, what type of readership do your articles have on that website?

A We get between two million and seven million page views a day.

Q And then is Real Clear Politics -- why don't you just explain what it is in terms of a business, not just a website.

A So that's the common misconception. I probably shouldn't have presented it as a website because that kind of gives a certain feel. We're a company of 60 people, employees. We have offices on K Street. The employees get salary, benefits, full package.

Q You were asked some questions about serving as an expert for the state as a defendant in some other cases. Would you have any issue representing a plaintiff in a

case against the state?
A Absolutely not. And if I could testify truthfully to the matters that I was asked to testify, zero.
Q Have you made any political donations this year?
A I donated in Hillary Clinton.
Q We were -- Mr. Hebert went through a series of congressional districts in your report and then comparing it to the Stephanopoulos and McGhee article. Do you recall that testimony?
A That's right.
Q Do you think the fact that there's a -- that Stephanopoulos and McGhee set out a different test based on seats rather than on a strict number with respect to congressional seats affects your analysis of the efficiency gap using congressional elections?
A It doesn't, because in most instances the point was that these maps that we agree are gerrymanders didn't trigger scrutiny. Now, if you use the state legislative standard, a lot of times they trigger scrutiny going the opposite direction. But even if they don't trigger -- in other words, you have a Democrat -- under the state legislative test, a lot of these maps, these congressional maps that were drawn by Democrats would draw scrutiny as a Republican gerrymander. Even if you adopt a different test, the point still remains that

these are Democratic gerrymanders that don't draw any scrutiny. They don't meet their standard as they ably pointed out.

Q And there was some questions about imputations. Do you think your use of just presidential vote share instead of regression model that impute the congressional vote share based on the presidential vote share would affect that conclusion?

A I don't believe it was because there's just kind of off -- there's discrete districts where it makes a difference, but I don't think it changes the overall efficiency gap or it could make a difference.

Q And then Mr. Hebert ended up going to part of your report, if we could turn to 547, paragraph 123, that we hadn't gone over. And you were making a slightly different point with this paragraph and I wanted to let you just explain what you were referring to with respect to this 2011 Illinois plan.

A I'm sorry, which -- I'm sorry, which page are we on?

Q 123 is it?

A So Illinois is a map where again virtually everyone would agree it's an aggressive Democratic gerrymander. The *Almanac of American Politics* reports that under heavy pressure from party leaders, desperate to offset Republican gains in other states, Democrats on May 11

released a map designed to eliminate up to six Republican seats. And Republicans were unhappy about this. Yet you get an efficiency gap of plus 0. or .058 which doesn't trigger scrutiny, and as we noted, wouldn't trigger scrutiny under a congressional seat analysis either.

Q Okay. So why is that a problem?

A Because this is something -- you know, if we're trying to design a test for gerrymanders, we want to be able to capture what happened in Illinois. Because everyone agrees that's a gerrymander, but the efficiency gap doesn't capture it. It would never get subjected to court scrutiny. It would get a pass.

MR. KEENAN: There's all my questions.

MR. HEBERT: May I have one minute? (12:03 p.m.)

JUDGE GRIESBACH: Mr. Trende, every election we hear that --

MR. HEBERT: I'm sorry?

JUDGE GRIESBACH: I didn't mean to interrupt.

MR. HEBERT: I didn't mean to distract you.

JUDGE GRIESBACH: Mr. Trende, every year we hear that the election will be determined by Independents. No one ends up voting for Independents, that's not -- maybe this year we'll see something different. I know some states want to do none of the above. But how -- you know, this is a binary determination. It's either

Republican or Democrat. But how many people identify themselves? Is there a statistic that shows how many people identify themselves as Independents? And then what is the significance of that in this determination of what is a, you know, of partisan gerrymandering?

THE WITNESS: So that's something that's difficult to sort out. I mean if you look at the exit polls, there's a fairly -- and polling in general, about a third, you know, quarter of the country self-identifies.

JUDGE GRIESBACH: As Independents.

THE WITNESS: As Independents. But what we find and what political scientists have found is that most of these people really aren't Independents.

JUDGE GRIESBACH: They're lying.

THE WITNESS: Well, some of the standard supporters will identify as Independents, but that doesn't mean they're swing voters. They just think the Democratic Party is too moderate. You'll get some on the right who are the same.

And then there are people who are Independents, but they're maybe, you know, two ticks leftward of the Republican Party. So when push comes to shove, they're open to a Democratic candidate, but they're going to vote for the Republican most of the time. You end up with a

slice of maybe 10 percent of the electorate that's truly Independent. And it does make this sort of, you know, trying to project out on the basis of political orientation difficult. It's very hard to untangle that.

MR. HEBERT: Just a couple of recross questions.

RECROSS-EXAMINATION

BY MR. HEBERT:

Q Do you know, Mr. Trende, what Illinois's congressional efficiency gap was in 2010?

A I don't know in 2010.

Q Do you know that in 2010 the Stephanopoulos and McGhee article calculated a congressional efficiency gap for Illinois of 3. -- minus 3.4 seats?

A Well, that's a problem because in 2002 it was a joint plan between Republicans and Democrats. That should have been a neutral plan and yet you're subjecting it to court scrutiny.

Q Did you know that Stephanopoulos and McGhee calculated a congressional efficiency gap in Illinois of 0.5 seats in 2012?

A I didn't know how they calculated it. But as I understand, that still doesn't trigger scrutiny even though it's a Democratic gerrymander.

Q So the change in the efficiency gap, in the congressional efficiency gap for Illinois, is actually

about plus four seats?
A That's right. That's right. But it's not enough to trigger scrutiny under your plan.
Q Now, you indicate in response to a question on redirect from counsel for the state that you had made a contribution to Hillary Clinton?
A That's correct.
Q Now, according to *opensecrets.org*, you've made four other campaign contributions in '07 for a candidate named Oganowski?
A That's right.
Q And in 2000 you made a contribution to the George W. Bush campaign?
A I had no idea I had done that in 2000, but I'll accept that.
Q And in 2008 you gave money to John McCain?
A And Rudy Giuliani.
Q And Rudy Giuliani in 2007 according to opensecrets.org. You don't dispute any of that?
A No.
Q And they're all Republican candidates?
A People might bicker on Giuliani/McCain, but in 2008 they were running under the Republican banner.
Q When you donated to them, you donated to them and they were running as Republicans; correct?

A Very moderate to liberal Republicans, which is what appealed to me. But yes.

Q Now, just one last question. In between 2000 and 2012, the presidential elections that you voted in, you've only voted for Republicans; correct?

A At the presidential level. At the gubernatorial and Senate level I've tended to vote Democrat.

MR. HEBERT: That's all I have, Your Honors. Thank you.

JUDGE RIPPLE: Thank you. I think we are then finished with the witness.

MR. KEENAN: Yes, we are.

JUDGE RIPPLE: And you may step down, sir. Thank you for your testimony.

(Witness excused at 12:08 p.m.)

MR. KEENAN: Do we call our next witness? I don't know if it's easier to break a little bit early for lunch and come back early or we put him on right away. Or if want to just start and just put him on.

JUDGE RIPPLE: How long do you anticipate this witness?

MR. KEENAN: I think it would be a similar amount to what we've seen with Mr. Trende.

JUDGE GRIESBACH: Why don't you start. Start back up, please.

JUDGE RIPPLE: We would like to start, please.

MR. KEENAN: The defendants call Nicholas Goedert.

NICHOLAS GOEDERT, DEFENDANTS' WITNESS, SWORN,

JUDGE RIPPLE: Good afternoon, Mr. Goedert.

THE WITNESS: Good afternoon, Your Honor.

DIRECT EXAMINATION

BY MR. KEENAN:

Q Good afternoon. Could you just state and spell your name for the record, please.

A My name is Nicholas Goedert. Nicholas spelled N-i-h -- N-i-c-h-o-l-a-s. Last name is spelled G-o-e-d-e-r-t.

Q And I notice you took a piece of paper up to the podium with you. Can you just identify what that is?

A This is a copy of my report.

Q Okay.

A It was submitted on December 2nd of 2015.

MR. KEENAN: And that has been marked as Exhibit 546.

Q Dr. Goedert, what's your current employment position?

A I am currently completing a term as a visiting professor of government and law at Lafayette College in Easton, Pennsylvania.

Q What do you do in that position?

A I do political science research and also I teach classes in American politics and constitutional law.
Q What will you be doing next year?
A I will be beginning a position as an assistant professor at Virginia Tech in the political science department.
Q Is that a tenured-track position?
A It is a tenured-track position, yes.
Q What do you expect to be doing -- types of classes do you expect to start teaching next year at Virginia Tech?
A I expect it to be similar to what I was teaching at Lafayette with the exception I will also be teaching statistical and research methods in political science.
Q Okay. Let's go backwards a little bit. And where did you go to college?
A I got my undergraduate degree at Harvard University.
Q What did you study there?
A I majored in a field called social studies, which is in interdisciplinary honors major where you take classes in a number of different subjects but also take specialized seminars in political and social theory and write a senior honors thesis.
Q What year did you graduate?
A I graduated in 2001.

Q And what did you do after graduating from Harvard?
A I worked for two years in Washington D.C. working for a political polling firm doing writing and analyzing polls for mostly Democratic Senate and gubernatorial candidates. Also the presidential campaign of John Edwards.
Q Following that what did you do?
A I attended law school at Georgetown University Law Center.
Q When did you graduate from Georgetown Law?
A 2006.
Q What did you do after law school?
A For one year after law school I worked as a legislative analyst and bill drafter for the Maryland General Assembly, which was a nonpartisan position, a nonpartisan bureau.
Q Then did you go out and do some further graduate education?
A Yes. I received a Ph.D. in political science at Princeton University where -- I suppose it's called politics at Princeton University. Also an incidental master's degree as part of that process.
Q And what year did you get that degree?
A The Ph.D?
Q Correct.

A 2012.

Q What did you -- did you have a focus of your study at Princeton in the political science department?

A I focused in American politics and formal and quantitative methods, basically statistics and game theory. I wrote my dissertation on legislative redistricting, various aspects of that.

MR. HEBERT: If we could turn -- pull up Exhibit 546, Mr. Goedert's report, and then if we could go to the CV that's listed at the end. If we could pull up the education part of it.

Q And I see here it says *dissertation title*. What was the title of your dissertation?

A "Gerrymandering, Electoral Uncertainty and Representation."

Q And what did you write about in the dissertation?

A Well, various aspects of mostly congressional redistricting. I think a large part of it that would be, I suppose, relevant to this case was that I looked at effects of wave elections or changes in -- large-scale changes in public opinion in election outcomes in different years and how they affect what people expect to happen under various types of redistricting institutions, or in many cases unexpected results of a particular gerrymander, a particular map as a result of, say, having

an unexpected partisan tide, unexpected shift in vote outcome, say, within a particular decade. So I think that's probably the most relevant part of my dissertation to this case.

Q Have you published any articles in political science journals?

A I have.

MR. KEENAN: If we could move down.

Q There's a list of peer-reviewed publications. Okay. So can you explain some of the articles you've had published?

A Sure. So the most recent one which is the *Pseudo-Paradox of Partisan Mapmaking and Congressional Competition*, listed as conditionally accepted. At this point it could be listed as a forthcoming article, as a definitely accepted article in *State Politics and Policy Quarterly*. This would be part -- it's a version of a piece of my dissertation which I think is fairly close to what I was just describing, the effects of specifically shifts in public opinion and shifts in vote outcome over time and how they influence where we see competitive elections especially; when do we see a lot of close elections; when do we see a whole lot of noncompetitive elections, and how does both the gerrymander -- how does both the method that the districts were drawn and the

particular overall partisan tide in a particular year, how do those things interact with each other to produce, for instance, close elections in some cases or not close elections in another case.

Q Would you be able to summarize your findings in that article briefly?

A Sure. One thing that I do find -- so for one thing, I find that, for instance, maps that are drawn by nonpartisan commissions, they tend to be very, very responsive to partisan tide. So maybe we see huge shifts in the partisan composition of a state as a result of relatively modest changes in the electoral -- in the overall vote outcome under, say, nonpartisan commissions.

But in contrast, under partisan maps we actually see many of these maps backfire in the case of adverse partisan tides. So we see many cases, and a statistically significant number of cases, where we see an unexpected number of close elections. For instance, in Republican-drawn maps when you have a Democratic tide, for instance, in 2006 or 2008 or I go back 40 years into the 1970s. So, for instance, the biggest partisan tide for the Democrats would be in 1974, the post-Watergate election where you saw huge shifts in, for instance, I believe, say, the map drawn in New York, which was drawn by Republicans in the 70's, essentially a backfire of

this map. And analogously you see big backfires in maps drawn by Democrats in, for instance, many southern states in the 1990's, for instance, in response to the 1994 wave election and even in, say, the 2010 Republican wave election, you see a lot of these backfiring maps in the case of -- well, only a couple maps drawn by Democrats.

Q When you say backfire, what are you trying to imply?

A Sure. I'm implying that in the case of, for instance, Republican maps, Republican-drawn maps, that Democrats won many seats that were drawn to be narrowly Republican; all right? So maybe drawn with a baseline 52, 53, 54 percent Republican majority. I observed that in, say, 1974 or 19 -- sorry, 2006 or 2008, many of these seats were actually won by Democrats. And I think the *Vieth* case that I think the last witness testified to was a really good example of this, the Pennsylvania map that was at issue in a previous Supreme Court case where we saw a very clear example of a backfire.

Now, I should mention that this particular article is only measuring the competitiveness of elections, so whether elections are close or won by huge margins. But in my dissertation I expand on this and also look at the actual sort of partisan balance and I find very similar results to what I'm describing.

Q And then we'll skip the 2015 article there and come

back to it. What about the one in 2014 about women deliberating with a distinctive voice? Can you describe that briefly?

A This is an article that I coauthored with a couple of other authors where it's an experiment in which -- my coauthors actually ran the experiments, I did a lot of the data analysis here. It was related to small group deliberation and it was looking at when women are more likely to participate in deliberation and political debates, depending on whether women constitute the majority of a group or only constitute, say, one member of a group; interacted with what the decision rule for the group was, do they decide based on unanimity or pure majority rule.

Q That's probably enough. What journal was that published in?

A This was published in the *American Journal of Political Science*.

Q How respected is that journal?

A I would say it's highly respected. It's certainly one of the most respected journals in political science.

Q Going on to this 2014 article, *Redistricting Risk and Representation*. What was that article about?

A So this article is in some sense an article published in the *Election Law Journal* which introduces a

lot of the themes in my dissertation through a series of case studies in the 2000's decades. So I both look at, say, the competitiveness of elections under these different case studies. I think I used two partisan gerrymanders, one nonpartisan commission, and one bipartisan gerrymander. This is where Legislature -- parties on both sides of the Legislature agree to, say, protect incumbents. And I look at how these maps respond to, again, changes in partisan tides and I also look at different aspects of how people might want to be represented and how they're maybe better represented under different -- under one sort of map as opposed to another.

Q Okay. Then if we go to the next page. We see one in 2014 *Gerrymandering and Geography*. Can you explain what that argument is? Or article. Sorry.

A This is a short article that I published which takes a first cut at trying to tease out how much of the bias towards the Republicans that we observed in the 2012 election outcome, and what I mean by bias here is that in the congressional -- national congressional races in 2012, we did see an unusual outcome in that Republicans won a majority of congressional seats, but Democrats won a majority of the popular vote. What I'm asking is was this more due to the fact that Republicans controlled the

seat-drawing process in more states or was it due to the fact that, say, we have this geographic concentration which narrowly biases a lot of states in favor of the Republicans, a geographic concentration where Democrats are very concentrated in cities and Republicans are more, say, efficiently spread out in more rural areas.

Q And what did you find?

A Well, I found that both of these factors have a significant impact and that actually either one of them alone would have been enough to create this, in some sense, counter majoritarian outcome, but that both of them are important to consider.

Q We'll go into the article itself in a little more detail later. But if we could go up again to the 2015 and this is the case of the disappearing bias. What was that article about?

A Yes. This is also a short article that uses the same method that I used in the previous article to analyze the 2014 congressional election outcome. And what I noticed about the 2014 congressional elections is that we did not observe the same amount of pro-Republican bias. We also did not observe the counter majoritarian outcome. In this election the Republicans won a substantial majority of the national congressional popular votes. However, they didn't win really that many

more seats than they won in 2012.

So a lot of the bias that we saw in 2012 kind of disappears and I'm trying to answer was that due to the fact that the geographic bias disappeared or was that due to, you know, the Republican gerrymanders were less effective.

Q And here it says *Forthcoming at Research & Politics.* At this point has that been published?

A That has been published and is publicly available.

Q Okay. Let's pull up Exhibit 548 which we were talking about. This is your 2014 *Research in Politics* article, *Gerrymandering or Geography*.

MR. KEENAN: If we could move down to the next page.

Q You mentioned bias. How did you measure -- what were you measuring as for bias?

A I'm measuring against a historical average of congressional election results over the past 40 years. So I'm saying given a certain vote share, how much does the seat share in 2012 compare to what we might expect given how elections have turned out over the last 40 years on average. I run a very simple regression model to determine what that average is. Then I compare 2012 against that regression model.

Q And then what is the slope of that bias line, if you

understand what I'm saying?

A I do understand what you're saying. So the actual model that I use is not what we might call a linear regression where you have a clear linear slope. However -- so I use what we call a probit model, which compares -- uses a normal distribution as opposed to a linear model. However, I think it's fair to say that within the range of relatively close elections outcomes, say where each party wins at least 40 percent of the vote, that the model that I use have something that's very close to a slope of 2-to-1 in the sense that parties tend to win about two percent more seats for every one percent more of the vote that they win.

Now, this only holds with respect to that range of election outcomes between, say, 40 and 60. My model, which I think is better adapted to more extreme election results than a linear model, would have different results if, say, a party wins 75 percent of the vote in a particular election year.

Q And how does that compare with what the efficiency gap does?

A So the efficiency gap is a linear model that always -- that always compares the actual election outcome to a 2-to-1 slope, regardless of the actual number of votes that a particular party won. So it uses

this 2-to-1 slope throughout the entire range of possible vote outcomes.

Q Now, are you measuring the bias based on any sort of -- that two slope for any sort of reason that parties are supposed to get that number of seats as a legal matter?

A No. I am only measuring it because that's what we observed, we have observed as a historical average. So I'm trying to explain why was 2012 -- why did it deviate so much from the historical average. Why was it so unusual. So comparing it to what we have observed in the past. I'm not saying this is what we should observe or this is the right election outcome.

MR. KEENAN: If we could just go to the next page of this article. And if we could blow up this chart here.

Q Could you explain what this shows?

A Sure. So this shows for the last 40 years, from 1972 to 2012, each of the blue dots is -- the x-axis is the percentage of vote that the Democrats won in the national congressional popular vote. That's the aggregate all votes for Democratic candidates over all congressional districts compared to the total number of votes that both Democrats and Republican won. So it's the two-party vote share. So that's the x-axis.

Then the y-axis is the percentage of seats the

Democrats won in that actual congressional outcome. So the blue dots are all of the last 40 years of congressional election outcomes.

Do you want me to explain the lines as well?

Q Yes. Sure.

A So the lines are the historical average from 1972 to 2012 if you run a very simple regression model that would predict, based on this historical data, how many votes would we expect a party usually to win if they win a certain given vote share. And I've shown two lines here. One of them is the actual linear model -- I forget off the top of my head which one is which because they're so close. It's actually in the article. But one of them is the linear model, the 2-to-1 vote share, and one is the probit model that I actually use. You can see that they are very, very close to each other, within the range of actual national observed election outcomes that we see.

Q Okay. Now -- so I'm just trying to see. So if we see 2006 in the middle here, what does that represent?

A So 2006, I don't know, should I be highlighting that? It's right there. Okay. So this is, of course, an election in which you would normally consider this to be a Democratic wave election, right? So Democrats won a rather large percentage of the national vote share, about 55 percent. And in this case they did win a majority of

seats. So you can see down here 55 percent, that's the -- I'm a little off -- but that's the amount of the vote share that they won on the x-axis. And then I think they won about 54 percent of the seats. That's on the y-axis.

Now, we wouldn't consider this a counter majoritarian outcome because the Democrats won a majority of the vote and they also won a majority of the seats. However, given this 2-to-1 slope that we've historically observed, we would actually expect, if 2006 was historically average over the last 40 years, we would expect Democrats to actually win, say, 59 percent of the seats. So the reason that 2006 falls below both of those lines is that they won fewer seats than expected according to the historical average.

Q Okay. And then I see, for example, 2008 is above that?

A Sure. Right here.

Q What would that signify?

A In this case the Democrats won a slightly larger percentage of the vote than in 2006, so it's a little bit shifted over to the right in terms of the x-axis. But they won a much larger share of the vote in terms -- I'm sorry -- much larger share of the seats, and, in fact, 2008 is much closer to the historically average line. So

I would describe this as having less Republican bias in 2008 compared to 2006 if we're defining Republican bias as this deviation from historical average.

Q But if it's under the line, is that showing Republican bias?

A Under the line would be showing some sort of Republican bias. How far it is from the line would be how much Republican bias.

Q And on the other side of the line what would that show?

A Right. If it's above the line, that means that it would have Democratic bias. In these elections the Democrats won more seats than expected from the historical average.

Q From your graph, what's the last time the congressional elections showed a Democratic bias?

A It's difficult for me to read. It looks like it might be 2002. It was right on the line. So that would be essentially 0 bias. It looks like 1994 is actually the last election where there's a perceptible Democratic bias.

Q What happened in 1994?

A 1994 was the Republican wave election where Republicans for the first time won control of Congress in, I believe, almost 40 years. And in this case, the

Republicans did win a majority of the vote and they won a majority of the seats, but they actually didn't win quite as many seats as what we expect from the historical average. So again, it's not a counter majoritarian outcome, but it actually is slightly based toward the Democratic outcome.

Q This one has a slope of 2. What would the slope be if you looked at just the elections since the 1990's round of redistricting?

A Yeah. So I have calculated this for 1992 through 2014, the most recent election, and the slope was actually much closer to 1.5. So we see a much less responsive curve just over the last, I guess that's 12 election results.

Q Is that because we see -- in the recent years we see more of the dots below the line; in the older series the dots are above the line?

A Yeah. You also see a little bit of just overall bias in favor of the Republicans. So if you actually calculated this for just 1992 through 2014, the line would both shift over to the right reflecting the -- overall the election outcome has become more biased in favor of Republicans. It's not an enormous shift, it's about 2 percent on a nationwide basis. And it would also sort of be less steep. It would look a little bit like

that. So move that way and that way.

JUDGE CRABB: Wait.

JUDGE RIPPLE: Mr. Keenan, could you --

THE WITNESS: So the line would move slightly to the right and the line would become less steep.

BY MR. KEENAN:

Q Would you be able to sort of draw it on the screen? Is that what --

A Oh, sure. So it would probably look something like -- I mean this is not going to be an exact drawing at all. But like that, if that makes sense; right? And I don't know if that actually perceptibly moves over to the right in terms of where we might call the intercept might be.

JUDGE RIPPLE: Mr. Keenan, would you try to help me come in for a soft landing?

MR. KEENAN: This is actually a good breaking point. We can stop here.

JUDGE RIPPLE: All right. Thank you, sir. The Court will then stand in recess until 1:35.

(Recess 12:31-1:34 p.m.)

MS. GREENWOOD: Your Honor, I just have a quick moment of housekeeping. Judge Ripple, you had asked that we talk about the database issues that were raised during Mr. Trende's examination. We've met and conferred and I

have a stipulation as to that. So the parties have agreed to stipulate that the imputation method for uncontested elections use by Professor Jackman is valid, reliable and methodologically sound. Thanks.

JUDGE RIPPLE: Thank you. That stipulation will be accepted. And Mr. Keenan, you were in the middle of examining your witness.

BY MR. KEENAN:

Q Good afternoon, Professor Goedert. We've pulled up Exhibit 546. Could you identify that for us?

A This is my report in this case.

Q Have you developed any opinions about the use of the efficiency gap to measure partisan gerrymandering?

A Yes, I have.

Q Can you identify what those opinions are?

A Well, I think I advanced a number of opinions in the report. Some of them include the idea that the efficiency gap would codify a certain standard of proportionality, which although it over some span of history has been somewhat similar to what we've observed, is not necessarily what we would observe in the future. Additionally, I feel that or it is my opinion that there are various normatively good reasons why a state might choice to draw a map in a certain way and even under these normatively good reasons we could and actually do

observe very high efficient gaps in various different elections. And I include a number of examples of cases, for instance, where states try to draw competitive districts or states try to get proportional representation and yet in certain elections we either see very large fluctuations in the efficiency gap or we see just single examples of very high efficiency gaps well beyond the threshold advocated by the plaintiffs.

In general, I feel the efficiency gap is a very chaotic and highly fluctuating measure for which it's inappropriate to judge the bias in a map based on one particular election result over the efficiency gap observed in one particular election result because this particular measure is so unstable and so does in particular elections. Again, very sensitive to the overall make-up of the electorate overall shifts in partisan trends we can see huge shifts in the efficiency gap in a single election. So I think it is somewhat extra dangerous to use the efficiency gap based especially on a single election to measure that.

Q Okay. Let's start off you mentioned it would codify a particular seats-to-votes relationship. What's the basis for your opinion of that?

A Well, just the way that the efficiency gap is defined, it is defined in both the article, the academic

literature on efficiency gap and I believe in reports submitted by the or complaint submitted by the plaintiff as prescribing that a party should win 2 percent of seats for every 1 percent of the vote that they win, or at least 2 percent more seats over 50 percent for every 1 percent more vote that they win. And the plaintiffs do rightly comment that this is in line with long-term historical averages, as I showed in the graph that you put up related to my 2012 gerrymander article.

Nevertheless, as I've also found, if you look at, say, recent history, this 2-to-1 responsiveness curve, as I would call it, this 2-to-1 responsiveness curve does not hold over, say, the last 20 or 25 years. And so whether it will continue to become less steep in slope over time, whether it will continue to be, say, a 1.5 curve over the next several decades or whether it will revert back to a 2-to-1 curve in future decades is entirely uncertain. So I think for us to declare that constitutionally it is constitutionally mandated that an election result follow this 2-to-1 curve is, you know -- I would be pretty caution about doing that.

Q You also mention that there might be some normative good reasons to draw particular districts and the effect of the efficiency gap on that. Can you explain what you meant by that?

A Sure. Well, many of the exhibits that I think the witnesses have presented so far in this case have been examples where one party controlled the redistricting process. We might call that a party gerrymander. Presumably that party was trying to win seats for their party. But this is not the only motivation, of course, that motivates people drawing maps. There are various other motivations that we might consider normatively good, that might be considered something that we would value in an electoral system regardless of what party we belong to.

For instance, we might think that drawing competitive districts where everyone's vote has the potential to be decisive is a normatively good thing that we might want to achieve in our districting process. Or on the other hand, we might believe that achieving some sort of proportional representation where if 60 percent of the voters belong to a certain party, they should generally get about 60 percent of the representation in the legislatures. There's lots of countries that use explicit proportional representation to structure the partisan makeup of their legislatures.

Now, the United States does not do that. But if we find that a map has -- that a legislature has constructed a map which has the effect of achieving proportional

representation, I don't think we should think that's a bad thing or that it's a presumptively unconstitutional thing because we observe a very high efficiency gap in a particular election.

Q Are you offering an opinion that any of those were the intent of the Wisconsin Legislature in this case?

A No, I'm not.

Q So why do you think that's still important for this case though?

A Well, this case is asking us to adopt a new standard that presumably will be the standard used to judge future cases involving the constitutionality of a gerrymander. So I think if the Court does choose to adopt the standard, it should be one that is applicable to future cases where the motives might be different or the make-up of the Legislature might be different or even, say, the body that's being gerrymandered might be different. So I think looking at examples from other contexts is useful.

Q You also mentioned competitive -- designed for competitiveness can result in various efficiency gaps. If we could go to Table 1 of your report on page eight. Can you just explain why competitive activities will yield large efficiency gaps?

A Right. So if you draw, say, for instance, you draw all of your seats -- you live in a state that is 50/50

Democrat -- 50 percent Democrat, 50 Republican in a typical election year and so you draw all of your districts to be similarly evenly balanced, and in an election year where both parties win about 50 percent of the vote, you would expect a lot of close elections. And maybe the Republicans would win some and the Democrats would win some.

But now let's say in one particular election cycle the Democrats win 55 percent of the vote. And I don't think that's an unrealistic swing. I think it's the sort of swing we see actually relatively often in, say, congressional elections. Say the Democrats won 55 percent of the vote statewide. They might also win 55 percent of the vote in almost all of those seats. All right? And so that increase in five percent of the vote would translate to a much larger than 10 percent increase in the number of seats. They might win 55 percent of the vote, but they would win, say, 80 percent of the seats, just in my very hypothetical example here.

On the other hand, if the Republicans won 55 percent of the vote, they would also win 80 percent of the seats. So if you're asking -- if you're evaluating this under a partisan symmetry standard, we wouldn't say that that map is unfair or unsymmetric. Nevertheless, that example where the Democrats won 55 percent of the vote but 80

percent of the seats would present an enormous efficiency gap, I believe, of 20 percent, which would be three times the threshold suggested by the plaintiffs for presumptive unconstitutionality.

Q Has anything like this been seen in the United States?

A Well, so the table that you've brought up here on my screen is an example from the Arizona -- recent history of the Arizona congressional election results. So Arizona is unusual among states in the United States in that it draws its congressional districts through a nonpartisan commission, not done by the legislature, and it is especially unusual in that the law creating this commission also requires the commission to try to draw competitive districts when possible right within the constraints of other legal constraints like Voting Rights Act constraints and equal population districts. So Arizona is very unusual among states in that they are actually legally required to draw competitive districts. So that's why you've used this example here.

Q What does the experience in Arizona show?

A So what the experience in Arizona shows is that relatively small fluctuations in the total vote for the Republicans can result in very wide fluctuation in the numbers of seats because they have drawn so many

competitive districts. So, for instance, in the first election cycle following the 2000 census, the Republicans -- and I'm showing this on this year, 2002 -- the Republicans won 55, 56 percent of the two-party vote and yet they won three-quarters of the seats. So this would result in an efficiency gap of 14 percent in favor of the Republicans. But because they have so many competitive districts, we see wide fluctuations in this efficiency gap over the course of the decade.

In the next map, 2012, where the Republicans also -- I'm sorry, the nonpartisan commission also drew a different map, we saw almost the opposite result. We saw that the Republicans still win a narrow majority of seats, but they actually won a minority -- I'm sorry, a narrow majority of the vote. But they actually won a minority of the seats resulting this time in a 14 percent efficiency gap in favor of the Democrats.

In between those two election results, we actually saw the sign of the efficiency gap at the direction of bias flip three different times because you had so many competitive elections and slight fluctuations in the vote could have produced fairly significant fluctuations in the seat share.

Q You also mentioned about proportional representation. How does the efficiency gap differ from

proportional representation such that it might cause a problem?

A Right. So I describe the efficiency gap as codifying hyperproportional representation. So proportional representation would suggest if you win 50 percent of the votes, you should win 50 percent of the seats. Now uniquely, the efficiency gap also says 50 percent of the votes you should win 50 percent of the seats. That's the only point at which the efficiency gap is the same as proportional representation.

As you deviate from 50 percent of the vote, proportional representation gets more and more different from the efficiency gap. So while under the ideal of proportional representation, you'd say if you win 60 percent of the vote, you should win 60 percent of the seats. Efficiency gap would codify the concept that if you win 60 percent of the vote, you should actually win 70 percent of the seats, and given 60 percent of the vote if you only won 60 percent of the seats, if you only achieve proportional representation, that would actually be a presumptively unconstitutional gerrymander against the party that won the majority of votes and seats.

Q Do you have any opinions about the historical instability or fluctuations in the efficiency gap?

A Well, I generally think that the efficiency gap is

rather unstable and that historically over the last 40 years this sort of range of elections that has been studied by Professor Jackman in his testimony, also the range of election study in the Stephanopoulos and McGhee article, I believe almost half of all plans, something like 40/45 percent of plans at some point exceed the prescribed threshold for presumptive unconstitutionality. And also, you know, among those plans that exceed this threshold, a fairly high percent, I think approaching 30/35 percent just of the plans that exceed this threshold, also within the same decade observe an efficiency gap that has the opposite sign, is biased in favor of the opposite party. I believe it is actually -- I'm sorry, go ahead.

Q I was going to stop and just clarify that. When you say it exceeds the constitutional threshold, is that just in any election over the course of the plan?

A Right. It exceeds either the 8 percent threshold advocated by Stephanopoulos and McGhee for State Assembly seats or the 7 percent threshold advocated by Professor Jackman in some election that was held under the plan, yes.

Q Now, the plaintiffs test conditions on the first election in the plan. Do you have an opinion on that?

A Yes. So I think -- so I would say while I have a

very high regard for the analysis that was done by Professor Jackman, one deep limitation I think it has is that it relies on a very limited dataset in one very important regard and in almost all of his analysis conditions its results just on the first election that was conducted under a map, usually the first election cycle following the redistricting; all right?

So while it may look in this dataset like we have several hundred examples of maps crossed with election results, we have several hundred data points of efficiency gap calculations, we actually only have five examples of first election cycles. And what's particularly important is that in my own research, I find that where we see the greatest fluctuation or we see the greatest number of unpredictable results is in large national wave elections.

So I gave the example of, say, 1994 or 2010 in favor of the Republicans where we see a lot of backfiring Democratic gerrymanders. 1974, 2008 in favor of the Democrats where we see a lot of backfire Republican gerrymanders.

What's important here, and I think this is largely coincidental, I don' think it's intentional on the part of Professor Jackman or any of the analysis presented by the plaintiffs, but what's important is that none of

these major wave elections happened to occur in this first election cycle. And especially we've done so much, we've seen so much analysis related to 2012. 2012 is a very unusual election in that it was so closely balanced between Democrats and Republicans. This is really the exception rather than the rule.

But actually most of these first election cycles were fairly evenly balanced. And so in these election cycles, yeah, maybe we can closely predict what the efficiency gap will be based on some sort of partisan baseline calculation that we've made. But if we actually try to apply this to a wave election, all of these calculations are going to be way out of whack. And so in the future, if, for instance, this Court were to adopt a standard of efficiency gap conditioning on the first cycle's election results; all right? And, say, in 2022 we saw a big wave election either in favor of the Democrats or in favor of the Republicans, we could see an enormous number of plans radically exceeding the prescribed threshold for no other reason than they were an unpredictable result related to the actual electoral wave we saw because we've only been conditioning in the data that we've so far been presented on nonwave election years and only on five data points.

Q Could you just explain in a little bit more detail

about what it means to condition on the first election?
A Right. So, for instance, the sensitivity analysis that was done by Professor Jackman, at least as I read his rebuttal report in particular, what he's looking at, and I think this is also contained a little bit in his initial report, what he asks is well, given what happened in the first election, how likely is it that we'll see, for instance, an opposite sign of the efficiency gap in a future election? But if all of those first election cycles are relatively evenly balanced elections like we observed in 2012 or like we observed in 1992 or in 2002, all right? You're going to get a very different result for how big a fluctuation we might see in the future than if you actually included wave elections in that conditioning, if that makes sense.
Q So what does this mean for, like, going forward in terms of, like, a standard that would be in place in 2022, for example?
A Right. So as I think I mentioned, if you were to adopt this standard going forward and we saw a wave election of the magnitude of, for instance, 1974 or, for instance, 2008 in a first election, then you might see all sorts of, say, backfiring partisan gerrymanders or all sorts of huge fluctuations in nonpartisan or bipartisan maps or really deep differentiations in

efficiency gaps in bipartisan maps designed to achieve proportional representation. The sorts of exaggerated efficiency gaps that you wouldn't observe just by looking at close elections.

And I mean one thing I do want to accentuate is that in some sense I think wave elections are the norm rather than the exception; right? When I go back in my own research and I look at the national popular vote in congressional elections over the part 40 years, much more often than not one party wins by 5 percent or more. So this very close election that we saw in 2012, that's unusual.

I think it is -- again, I think it is fairly coincidental that most of these conditioning elections, these first election cycles, it's mostly coincidental that most of them have been relatively close and not wave elections. But that does influence the results that you're going to see going forward and it's certainly not necessarily going to hold true in the future.

JUDGE CRABB: I'm sorry, what is not going to hold true in the future?

THE WITNESS: Oh, the fact that we might -- the fact that we will consistently see very close elections in the first election following a redistricting cycle. So what I'm saying is that there's no reason to expect

that 2022 will be as close as 2012. It could be a wave election like 2010 or like 1974.

BY MR. KEENAN:

Q Do you have any opinions about using sensitivity testing with respect to the first election seen in a plan using the efficiency gap?

A Well, I think at a very minimum, right, you need to have some sort of robust sensitivity testing that would be codified if you were going to use the efficiency gap in any way. I think that there's a lot of sort of different ideas about sensitivity testing that have been presented. One thing that I think would be important would be to acknowledge, for instance, that a particular election cycle falls within the range of possible election cycles. So you don't necessarily just want to do sensitivity testing based on doing a uniform swing from one -- from the actual observed, say, 2012 results. You would probably want to position that in the line of plausible election results or in the range of plausible election results and do some sort of shift away from there. I think it's just a slightly more complicated process than any of the evidence that's presented so far to really be a sufficient -- sufficient way to anticipate future efficiency gaps.

Also I don't think, as far as I know, the plaintiffs

haven't actually presented any sort of proposed legal standard for sensitivity testing. It seems completely absent to me from the --

Q And where is there a proposal that sensitivity testing should be incorporated?

A It is in the Stephanopoulos and McGhee article that I think has been discussed throughout the case.

Q And you've had a chance to review the Demonstration Plan, Mr. Mayer's Demonstration Plan?

A In broad -- you know, broadly speaking, yes.

Q Sure.

A I have not reviewed the actual specifics of where the lines are drawn.

Q Exactly. You've read his report though.

A Yes, I have.

Q You said that Mr. Mayer had access to information that the drafters of the plan did not. What do you mean by that?

A Well, most importantly he had access to what the actual result of the 2012 elections were. So the efficiency gap doesn't describe a map, it describes a particular election result. And you can only know what the efficiency gap of a plan will be after you already know what happened in the election. So if you're instructing a legislature to draw a map with a 0

efficiency gap or draw a map with an efficiency gap within this range, I wouldn't really know how to instruct a legislature to do that unless I could tell them what was going to happen in the future. All right? There's no necessary -- there's no data they can rely on that's going to tell them are we going to have a wave election in favor of one party or another two years in the future which will tell us what the efficiency gap will look like in this first election cycle.

So Professor Mayer knew what the actual election outcome was and could retrospectively use that to construct a plan that would have a 0 efficiency gap, but there's no way the Legislature could have known that that map or any map they could have drawn would have a particular efficiency gap when they drew it.

Q Professor Mayer says that the observed efficiency gap was very close to one that -- he used the Gaddie measure, but was predicted, he says, by the Gaddie measure. What do you say to that?

A Well, I think that's precisely because 2012 was so -- such a close election in terms of partisan balance between the Democrats and the Republicans. The Gaddie measure, I believe, is establishing some sort of baseline partisanship of what we should expect in a close election. So yes, if you have a very close election, if

you actually observed an election which was 50 point something percent for one side and 49 point something percent for the other side, yes, it will match up very closely. But there's no way the Legislature could have known that prior to drawing the map.

And as I also mentioned, that sort of almost exact partisan balance is the exception rather than the rule.

Q Professor Mayer, in response to your report, performed some uniform swings on the Demonstration Plan. And there's been testimony that what he did was he took account for incumbency and then calculated an efficiency gap and then after doing that, he then treated every seat winner as an incumbent, incorporated an incumbency advantage to whoever the winner was and then ran his uniform swing. Do you think this is a valid method of doing the uniform swing?

A No.

Q Why not?

A Because I think that when we're thinking about prospectively applying this test in the future, we want to know is this going to appropriately apply to this like the election cycle where the case might actually occur. So, say, for the first election cycle following redistricting. So I think the more appropriate way to do the sensitivity testing would be to ask what would have

happened in that 2012 election if the Democrats had won by 4 or 5 percent rather than, say, less than 1 percent; not well, let's assume all the Republicans run for reelection and all of the Republicans have this built-in incumbency advantage which can naturally overcome a Democratic swing of three-and-a-half percent.

I think if you didn't automatically assume that all these Republicans were going to win -- run for re-election, which of course is an unrealistic assumption, you would see a lot more responsiveness to a moderate-size Democratic swing.

Q Do you have any opinion on why the efficiency gap has tended to favor Republicans and also bias in congressional elections has tended to favor Republicans in the recent history?

A Yeah. I think this does speak to some of my own research which suggests that the way that Democrats and Republicans are actually concentrated or dispersed across geographic areas does naturally favor the drawing of very heavily concentrated Democratic districts and much more dispersed, less concentrated Republican districts. And specifically in an election cycle like 2012 that is very evenly balanced, this is going to produce a lot of marginal Republican seats and a smaller number of very heavily Democratic seats, and that's the type of

distribution that's going to produce a Republican -- a pro-Republican efficiency gap regardless of who drew the map.

Q Did you do an analysis of Wisconsin to see if this was the case in this state?

A I've not specifically done an analysis of Wisconsin.

Q Did you analyze the wards in Wisconsin?

A Oh, right. Yes.

Q Okay.

A I'm sorry, I thought you were talking about the elections --

Q I'm sorry.

A Yes, I did. I did look at the distribution of partisanship of the wards in Wisconsin.

Q If we could pull up Figure 1 on the report. Page 22. Could you explain what this chart represents?

A All right. So what I did here was I used a measure of baseline partisanship for each ward in Wisconsin. I think it's about 6,000 wards, that's a rough estimate. And the way I developed this baseline partisanship measure is I took Obama's 2012 vote share and I shifted it down 3. something percent uniform swing so that the national average vote share would be 50 percent for the Democrats and 50 percent for the Republicans. And then what I asked was given this uniform swing, 3 percent

uniform swing for each ward, what percentage of the vote did the Democrats get in each ward and I sort of put them into ten different bins based on what percentage of the votes the Democrats would expect to get in a 50/50 election. And I looked at both the absolute number of wards, and because there's such a high variance in the population of wards, I looked at the share of population in Wisconsin that resided in the wards in each different bin.

Q Okay. So what does the blue bar represent?

A The blue bar is the total percentage of wards in Wisconsin that, for instance, right, if I was going to point to this blue bar right here, that would be the percentage of wards in Wisconsin that vote between 30 to 40 percent Democratic. Or in other words, they vote 60 to 70 percent Republican in a 50/50 election. And it's about 22 percent of wards in Wisconsin fall in that bin.

Q And what does the red bar represent?

A So the red bar is the share of population. So if you look at the same bar for the pink -- sorry, let's -- right there, this is the share of population that falls in the same bin. Now, because these Republican wards tend to be somewhat rural and somewhat smaller, the share of the population is also going to be somewhat smaller in these narrowly Republican wards than the share of wards.

So here you see, I think it's something like 18 percent of the total population of Wisconsin resides in wards that are 60 to 70 percent Republican.

Q Okay. It says 30 to 40 percent --

A 30 --

Q -- Democrat --

A 30 to 40 Democrat. So this is a share of the two-party vote.

Q And then so the Republicans would then be 60 to 70 percent?

A 60 to 70 percent.

Q And what does it show for the wards in the population that are between 40 to 50 percent Democrat but 50 to 60 percent Republican?

A Right. So we'll see -- we see the largest number of wards and the largest share of population resides in wards, all right, basically voting precincts, that are narrowly Republican. So there is a much smaller share that reside in wards that are narrowly Democratic. So the distribution of wards in Wisconsin, which presumably is not politically motivated by how the wards are drawn, does tend to favor narrowly Republican wards. And if you'll notice at the extremes, you'll have quite a few wards that are 80 percent or more Democratic and especially there's a fairly large percentage of the

population of Wisconsin that resides in wards that are 80 to 90 percent, 90 to 100 percent Democratic, and almost no one lives in wards that are that extremely Republican.

Q Now, how much of the population -- if we add the 80 to 90 percent Democrat, 90 to 100 Democrat, which of the population is in wards of that level of Democratic partisanship?

A So 80 percent or more Democratic?

Q Yes.

A I believe it is about seven-and-a-half, 7 to 8 percent.

Q And what's the 90 to 100 percent?

A Oh, I'm sorry. You're just looking at this. I was summing them up. I think it's about 4 percent in the 80 to 90 percent bin and 3 percent in the 90 to 100 percent bin.

Q And it's seven-and-a-half when you add them together?

A It's something like that, yeah.

Q What's the percentage on the other side of the map that are -- looks like there's no Republicans in the 0 to 10 percent?

A There's one ward, about 6,000.

Q Okay. And then what about the 10 to 20 percent, what's the share of population?

A It's slightly less than 1 percent.

Q Okay.

MR. KEENAN: If we could pull up Exhibit 114. Actually could we go back to that.

Q If we summarize, what does the distribution of wards in Wisconsin show about the distribution of partisans in Wisconsin?

A It shows that many residents of Wisconsin, right, live in wards that are very, very heavily Democratic and many residents of Wisconsin live in wards that are narrowly Republican, but almost no one in Wisconsin lives in wards that are very, very heavily Republican, say, more than 80 percent Republican.

Q And how would that matter when wards are then, you know, put together into districts?

A Sure. So the natural method for doing partisan gerrymandering would be to pack as many of the opposing partisans as possible into a very small number of districts. All right? So if Republicans are going to try to pack Democrats into a small number of districts, it's fairly easy for them because there are so many wards that are already so heavily packed, whereas they were also going to try to disperse their own partisans as widely as possible. It's also easy for them to do that because there are so many districts that are, you know,

similarly in these two bins.

And even if we were going to, say, draw a map that would be not motivated by partisanship but, for instance, motivated by respecting existing city lines, respecting existing municipal subdivisions, so one example I found is that Milwaukee as a whole, the City of Milwaukee as a baseline votes, I believe it is, 78 percent Democratic. Madison as a partisan baseline also votes right around 78 percent Democratic. So if a nonpartisan gerrymanderer, a nonpartisan redistricter was going to try to draw districts that would respect those community lines, they're going to naturally draw districts that are 78 percent Democratic in Milwaukee and in Madison, whereas you just can't draw a district that's 78 percent Republican. Less than 2 percent of the wards and 2 percent of the population of Wisconsin lives in wards that's 78 percent or more Republican and they're all spread out over the state. I think Mr. Trende's map showed that to a certain extent.

So it's -- even if they were geographically concentrated, you couldn't draw more than two Assembly districts even if you were to not care with contiguity at all. So it's just much easier to draw packed Republican districts and packed Democratic districts.

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

and move to strike the testimony to the extent it goes to the justification prong. Professor Goedert was never tendered as an expert on traditional redistricting criteria and he was just testifying about it and the justification for the districting in Act 43. I'd move to strike.

MR. KEENAN: I don't believe he was testifying about specifically justifying the plan, he was just explaining why these things happen when you see ward distributions like that.

MR. POLAND: Well, I heard testimony about municipal splits and why things -- why lines were drawn as they were.

JUDGE RIPPLE: I think it goes more to the weight than the scope, and we're going to let the testimony stand.

MR. KEENAN: We can take that down and we can go to Professor Mayer's rebuttal report. Blow up the graph.

BY MR. KEENAN:

Q Are you familiar with Professor Mayer's Figure C here?

A I am.

Q Okay. Professor Mayer says that is in looking at districts, we should study what the districts look like. Do you think that's a valid criticism? He says the

relevant line here is this blue one that looks at districts, not the red one that looks at wards which is yours?

A Well, I think it is a relevant comment. I don't know that he is in any way contradicting anything that I'm saying.

Q Okay. Why not?

A Well, because -- so I don't know if this particular graph has been explained in the court already.

Q Why don't we re-explain it. Professor Mayer did go over it, but you can re-explain it.

A So my understanding of the red line is it is essentially a repeat of the graph that we just saw that was in my report; right? So this is the distribution of wards in Wisconsin and it looks very similar to the graph that we just saw; right? So we have a large share of wards that are slightly Republican that are over here, and then we have a fairly decent share of wards that are very, very Democratic that are right over here. And we have basically no wards that are very heavily Republican over here. All right? So this is the data from my report. All right?

And then in contrast, Professor Mayer is showing the distribution of districts under the Wisconsin plan that was actually enacted, the Act 43 plan. And I believe

what he's trying to show is that well, even though there were a majority of wards that were slightly Republican, there were even a greater majority of wards -- or sorry -- even greater majority of districts that were slightly Republican. So this peak, say, is higher than the peak in the data from my chart. I think that's what the intent of this graph is.

So he's showing that while actually it seems like partisan intent did matter; right? They in some way reshaped the distribution of wards to the advantage of Republicans.

Q Do you think that's a valid criticism of your method?

A Certainly not necessarily. I think we might naturally expect, all right, that if the wards that are very, very heavily Democratic are geographically concentrated, that the districts that compose those wards would also be similarly concentrated. So one thing you'll notice from this graph is that the blue line and the red line in the heavily Democratic graphs -- I'm sorry, I'm putting up arrows where I don't mean to -- are very similar. So I expect that these are the wards in, for the most part, Milwaukee and Madison and maybe some other very heavily Democratic cities. In contrast if you look at these heavy Republican wards that are over here,

very, very small number of --

JUDGE GRIESBACH: Districts or wards.

THE WITNESS: Sorry?

JUDGE GRIESBACH: You mean districts or wards?

THE WITNESS: I mean wards. So in this case I means wards. The very heavily Republican wards, this very small number of wards that are, looks like 80 percent Republican, because these are spread out over the state, you can't draw a district that's 80 percent Republican. We shouldn't under any districting method expect to see a district. Rather what's probably going to happen is you're going to have a district that's made up of a couple wards that are here and a couple wards that are here and on average probably a couple wards that are over here. On average the wards that are over on this extreme of the graph, they are going to become, because of sort of an average, sort of deviation to the mean, on average they're going to move in this direction; right? And become slightly less Republican when they form districts.

BY MR. KEENAN:

Q Professor Mayer said the distribution of wards is almost symmetrical, the red line here. Do you think the red line is symmetrical?

A I don't think it's symmetrical.

Q Can you explain why not?
A First of all, it's very obvious from the extremes, right, that ten times as many people live in 80 percent plus Democratic wards as live in 80 percent plus Republican wards. And I also note in my report that an absolute majority of wards, so more than 50 percent of all the wards in Wisconsin are in only two of the bins. They're in the 30 to 40 percent Democratic bin and the 40 to 50 percent Democratic bin. So if an absolute majority are in just those two bins which are slightly to the Republicans side of center, I don't think that's really -- would be described as symmetrical.
Q Now, Professor Mayer has employed a method of analysis called the *isolation index*. And he says that it would refute the analysis that you provide here. Do you believe that to be the case?
A I do not.
Q At your deposition had you heard of the isolation index?
A I had not.
MR. POLAND: I'm going to interpose an objection right here as well and I'm going to object to this testimony because this is new testimony that counsel had an opportunity to provide rebuttal on as of the time of Dr. Mayer's rebuttal report, which was tendered in

December. This is the first time we've heard anything about it.

MR. KEENAN: When did we have an opportunity to provide rebuttal expert reports?

MR. POLAND: You could have moved for leave to file a rebuttal report addressing that after Dr. Mayer's rebuttal report he filed in December and you took his deposition as well and you didn't do it.

MR. KEENAN: The plaintiffs haven't been limited to their expert reports and testimony. It would be unfair to limit the defendants.

MR. POLAND: We certainly explained that to Your Honors. We believe the record will speak for itself on that.

JUDGE RIPPLE: We'll take it under advisement and rule when we take a look at the record.

BY MR. KEENAN:

Q Have you ever seen the isolation index in the political science literature ever used to calculate the distribution of partisans in a state or anywhere?

A Not that I can recall.

Q Okay. Since your deposition have you looked into the isolation index?

A I have.

Q Have you discovered why you had never seen it used

to measure the distribution of partisans?

A Yes.

Q And why is that?

A Because it is an entirely inappropriate method to use because -- in the way that the measure is defined as part of the definition of the measure, if you are measuring the relative isolation of two subpopulations which each compose about 50 percent of the populations of a greater population, so, for instance, if you're using it to describe the isolation of Democrats as opposed to Republicans within a state, by the definition of the measure those two numbers, the isolation of Democrats and the isolation of Republicans, if they're divided 50/50, those two numbers will always be equal regardless of how they're actually distributed. Regardless how many Democrats you put in one district and how many Republicans you put in another district, under the definition of isolation index those two numbers will always be equal. So the fact that Professor Mayer observes that the isolation of Democrats and Republican is very close to equal across a range of election cycles, it actually has nothing to do with the dispersal of Democrats and Republicans across districts. The only reason you see that is in some election cycles, Democrats won a few more votes than Republicans across the state,

not because they're more isolated.

MR. KEENAN: If we could pull up Exhibit 581. Can we blow up the first page?

Q Do you recognize this document?

A I believe this is a document from the United States Census which describes the definition of various measures of population dispersal or isolation. It says residential segregation.

MR. KEENAN: So if we can go down to I believe it's page four. And if we blow up No. 6 there in the bottom right.

Q What does this No. 6 describe?

A This is the mathematical definition of an isolation index.

Q Can you explain what that equation means?

A Yeah, sure. Okay. What this initial large Sigma represents is that this isolation index is going to be calculated by generating a quantity for each district or each precinct; right? It's each subdivision you're trying to measure. It's going to generate a quantity for each precinct, and then it's going to sum over all of these quantities for every precinct. So that Sigma is the sum over all precincts or all districts.

And then what these other two quantities represent is that for each precinct, it's going to calculate this

as the product of two different numbers. And these two different numbers, we don't actually have the definition up here, but I don't know if you want to --

Q We can move over. We can zoom out and move over then. Look at the definition.

A It's going to be a little hard to view both at the same time. But the two different numbers here are actually fairly easy to describe.

Q Sure. What is x(i) which is the enumerator in both fractions?

A So x(i) is the minority population in the particular area, in the precinct or in the district. That's the total population of, and it says minority here, but we might say here the population of Democrats or the population of Republicans, whatever you're trying to measure.

Q And it says minority. What do you understand that the isolation index usually measures?

A It usually measures the segregation of a minority of an actual minority population that constitutes much less than 50 percent of the population.

Q Okay. So then there's two fractions here that -- what's the first word, it says "x" divided by "x." What's the denominator there, that "x"?

A Yeah. So that first -- that x(i) over big "X," that

represents the share of the group that is in a particular district; right? So what we will be asking here is what percentage of all Democrats in the state reside in district N or precinct N. That's the first quantity; all right? So it's the share of partisans in the district, the share of the group in the district.

Q And then what's the second -- we have x(i) over t(i). What's that?

A Yeah. So the second is almost the exact converse. It's the share of the district that is part of that group. So it's what percentage of that precinct is Democratic; right? Yeah.

Q And then if we were going to do this for the Republicans as well, how would that change?

A Well, it would be the mirror image in each district; right? So it would be the total share of Republicans statewide that are in that district multiplied by the percent of that district that is Republican. That would be the product for each district, and then you'd sum over all of the districts to create the total isolation index for the state.

Q Maybe we can do an example of this.

MR. KEENAN: Can we pull up Exhibit 575 so we see -- move down a little bit, please.

Q So we have an example here. Could you explain how

you would go about calculating -- first, just explain what the distribution here is of party A and party B.

A Sure. So this is a hypothetical state that has been divided into four districts. And in this hypothetical state, you have 400 voters, and 200 members are party A and 200 are members of party B. And the way that they've been divided into districts or precincts or whatever, I guess we've labeled them districts here, is that one district is very heavily concentrated with party A. So 80 members of party A and only 20 members of party B.

Well, the other three districts are more dispersed, but they have a relatively narrow majority of party B's partisans. So the other three districts are 40 percent party A and 60 percent party B.

Q Okay. How would you describe this configuration of partisans with respect to converting votes into legislative seats?

A Well, I would expect that unless there is an enormous swing in favor of party A, that party B, despite only winning 50 percent of the vote in a typical year, would win three seats and party A would win one seat. And party A would win that one seat by a huge majority and party B would win the other three seats by relatively more narrow majorities.

Q Can you show how you calculate the isolation index

for party A?

A Sure. Okay. So we have to go district by district; right?

Q Sure. Why don't we do District 1 then.

A Okay. So in District 1, again we have those two quantities that we need to know. The first one is what percent of all members of party A reside in District 1. We know there's 200 members of party A, 80 of them reside in District 1. So I guess we could say -- can I write on the screen here?

Q Sure.

A So point -- that didn't work. .4 -- points are arrows; right? .4 or 40 percent of all A's reside in District 1. That's the first of the two quantities that we're interested in.

Q Then what's the second quantity then?

A The second quantity is what percent of the voters in District 1 are members of party A, and we can see fairly obviously that is 80 percent. So the second quantity would be .8, and then we want to take the product of these two; right? And so that would equal .32.

Q Actually -- and then so we have .32 for District 1. Maybe we should clear off this. And then would the score, the district score for 2, 3 and 4 be the same?

A Well, the district score for 2 would be the same as

for 3 and 4.

Q Correct. That's --

A Right.

Q So why don't you calculate the score for District 2 and then we can just, you know, know it's the same for 3 and 4.

A Sure. So for District 2, the first question we want to ask is what share of Democrats reside in District 2. It's 40 out of 200. So that would be .2. And the second quantity, what share of District 2 residents are members of party A, so I refer to Democrats instead of party A. So -- and it's 40 percent. So that's .4. And we take the sum of these and we would get .16; right? No, I'm sorry. .08. And that would be the same for 2, 3 and 4.

Q And so we'd have .32, .08 and .08?

A Right.

Q And then what do we do with all those numbers?

A You take the sum of all that numbers.

Q What does that equal?

A I believe it's .56.

Q Okay. So why don't we clean that off and then we'll run through the same exercise for party B.

A Sure.

Q So did you calculate the sum or the total for District 1 for party B?

A Okay. So in District 1, it's again what share of B's are in District 1. It's 20 out of 200, so that would be .1. And then the second quantity is what percentage of residents of District 1 are members of party B, and that would be 20 percent, so that would be .2. And we take the product here and we've got .02. That would be the quantity for District 1 for Republicans.

Q And then how do we go about doing that for Districts 2, 3 and 4?

A So again, it would be the same for 2, 3 and 4. The first question is what percentage of members of party B reside in District 2. It's 60 out of 200. So that would be .3. 30 percent. The second quantity is what percentage of District 2 are members of party B. That would be .6. Again, this is hard to show on the screen with all the arrows. You take the product of these two numbers and you would get .18. That would be for District 2.

It would be the same number for Districts 3 and 4.

Q Okay. So then what would we do?

A So you'd sum over those four districts; right? So .18 three times, and then that previous calculation of .02, you take the sum of those four numbers and you again get .56, which is the same as the number that we got for the Democrats. So despite the fact that the Democrats

appear very heavily concentrated in one district; right? Maybe this is a state that has one city in District 1 which is very heavily concentrated with Democrats, the isolation index is identical for Republicans and Democrats and, in fact, it doesn't matter how you distribute Democrats or Republicans across these four districts as long as there's 200 party A members in the state and 200 party B members in the state. The isolation index will always be identical for party A and party B regardless of the dispersion.

Q So you think the isolation index is a valid way to measure the concentration of partisans in a state?

A No.

MR. KEENAN: I have no further questions.

JUDGE CRABB: Can I ask you to do that again? You're saying that if there are 200 Republicans, 200 Democrats and you put them into four different districts, it doesn't matter how you do it?

THE WITNESS: It doesn't matter how you do it. In any population, if the number of Democrats and the number of Republicans is equal regardless of how they're distributed across the districts, the isolation index for Democrats and Republicans will be equal.

JUDGE CRABB: But the votes will not be equal.

THE WITNESS: Right. So -- well, the total

number of votes, we're presuming they get an equal number of votes. But certainly the seats will not be equal. So even though the distribution is highly asymmetrical, the isolation index makes it look like these two parties are equally concentrated.

JUDGE CRABB: I see.

MR. POLAND: May I proceed with cross-examination, Your Honor?

JUDGE RIPPLE: You may. (2:30 p.m.)

CROSS-EXAMINATION

BY MR. POLAND:

Q Professor Goedert, before your deposition about six months ago you had never heard of the isolation index, had you?

A I certainly was not aware of its definition. I mean I might have run across it casually.

Q Now, when did you first look up the isolation index after you heard about it in your deposition?

A I believe it was about ten days ago.

Q And the simple calculation you just walked through with Mr. Keenan, when was the first time that you actually went through that calculation with him?

A I think it was somewhere between a week, slightly more, seven to ten days ago.

Q Seven to ten days ago? All right. Now, you said

you weren't aware of any work using the isolation index to analyze political parties; correct?

A Correct.

Q I'm going to hand you a binder of exhibits.

MR. POLAND: I'd like us to pull up Exhibit No. 118, please.

Q And the binder that I'm going to bring you is a binder -- the Court has copies of it.

MR. POLAND: These are Dr. Mayer's reliance materials. These are the articles that he had cited.

Q I'd like you to open that binder, please, to Exhibit No. 118 and that's Tab No. 3 in the binder in front of you.

A Okay.

Q This is an article called *Myths and Realities of American Political Geography* by Edward Glaeser and Bruce Ward. Have you seen this before?

A I don't recall that I have.

Q I'd like you to read the abstract into the record, please. I'm sorry. I'm sorry, wrong page. I'd like you to turn to page six and I'd like you to read the first full paragraph into the record. That's the one that says following Klinkner.

A "Following Klinkner (2004), we calculate dissimilarity indices and isolation indices for

Republicans and Democrats based on voting in the last presidential election between 1840 and today. In all cases, we have eliminated individuals who voted for neither Republican nor Democratic candidates. We use counties as the units of observation. Figure 2 shows the time patterns of these indices."

Q Now, Professor Goedert, you just went through a simple example of calculating the isolation index with Mr. Jackson; correct?

A Yes.

Q In your example you reported what's known as the *raw* or *unadjusted isolation index*, didn't you?

A I reported the isolation index as defined by the United States Census.

Q Do you know the difference between the raw isolation index and unadjusted isolation? Or I'm sorry. Do you know the difference between the isolation index and the raw or unadjusted isolation index?

A No.

Q You didn't adjust your isolation index that you calculated here for either groups' share of the population, did you?

A Both groups' share of the population is equal. Under this condition the isolation index will be equal for both parties.

Q All right. I'd like you next to turn to Tab No. -- Exhibit No. 119. That's in the binder in front of you, Tab 4. I'd like you to turn to page three. And that's the number page three in the bottom right-hand corner. And I'd like you to read the first full paragraph on page three. It begins "The isolation index."

A I'm sorry, I'm looking at page three and it says "Following every census enumeration."

Q This is page three in the bottom right.

A Oh, okay.

Q Page 11 of 36 in the caption and header.

A Okay. Sure. Can you repeat the question?

Q Certainly. Would you please read the first full paragraph on page three. It begins "The isolation index..."

A "The isolation index is designed to distinguish this sort of scenario from one where neighborhoods have dramatically different racial character. It measures the tendency for members of one group to live in neighborhoods where their share of the population is above the city-wide average. In this hypothetical example, black residents live in a neighborhood that is 2 percent black, which is just 1 percentage point higher than what we would expect under perfect integration. The isolation index would therefore be on the order of 1

percent rather than 50 percent.

Q Now, this is an article written by Edward Glaeser, if you look at the title page.

A Yes.

Q Have you ever seen this article before?

A I don't believe that I have.

Q Now, in this passage that you just read, Glaeser and Vigdor are using the adjusted isolation index, aren't they?

A I don't know.

Q And they're deducting each group's share of the population from its raw isolation index score, aren't they?

A I don't know.

Q Now, I'd like you to take a look or could we pull up Exhibit 114, please.

MR. POLAND: We're going to pull it up on the screen here because we don't have a separate copy of it.

Q And you've read Dr. Mayer's rebuttal report; correct?

A I have.

Q I'd like you to turn --

MR. POLAND: Actually, could we have page number 16 of Dr. Mayer's rebuttal report up on the screen, please.

A Is this report in the binder?
Q It's not going to be in your binder. We'll pull it up on the screen for you. And I'm going to ask you to turn to page 16, please. Are you there?
A I'm sorry, I don't have the report.
Q No, no. We're going to pull up the right part of the screen. I want to make sure you're looking at the screen.
A I'm on page 16. Sorry.
Q Terrific.
MR. POLAND: Could we pull up the third paragraph, please. Highlight the third paragraph. Can we zoom in on the third sentence? It begins "The isolation index..." Right there. Yeah.
A "The isolation" --
Q I'm sorry. I was going to highlight the second -- the sentence that follows as well. And this is Dr. Mayer's rebuttal record -- rebuttal report. Could you please read that into the record?
A "The isolation index indicates for the average member of a group residing in a certain geographic unit (such as a ward) what share of the member's neighbor in the unit belonged to the same group. It measures how geographically isolated a group is and it can easily be adjusted by deducting a group's share of the statewide

population to show how much more isolated a group is than we would expect given its statewide share.

Q So in his rebuttal report, Professor Mayer reported an adjusted isolation index, not the raw isolation index; correct?

A I believe that's correct.

Q All right. Now, let's go back to the simple example that you gave us before. Isn't it correct that if we changed a single number, the Democratic and Republican isolation index scores would stop being equal?

A I'm sorry, which number are you proposing to change?

Q Any one.

A If you move Democrats from one district to another, the isolation index would still be the same for Democrats and Republicans. It would change or the number for both Democrats and Republicans would be different than it had been previous, but it would still -- they would still be equal to each other and that's the important thing that Professor Mayer is measuring, whether they're different from each other.

Q What if you change one voter -- what if you change one voter -- one voter changed parties or ten voters changed parties or 100 voters changed parties?

A Yes. If a voter -- if you have more members of one party than another, then the isolation index for the two

different parties might be different. But it would be different because one party composes a larger share of the statewide population and not because that party is more isolated on a district-by-district basis.

Q Now, let's also turn to the Global Moran's I which we covered earlier. You'd never heard of Global Moran's I prior to your deposition; right?

A No, I haven't.

Q And it's true that Global Moran's I does not have the property you identified for the isolation index which is that it's equal for both parties when they're both 50 percent of the population?

A I actually believe that it does, but the Global Moran's I, it's a more complicated calculation. It's hard to -- it would be much more complicated to simplistically show. I don't feel like I have done enough research into Global Moran's I to confidently answer the question.

Q And at the time of your deposition, you had not heard of the Global Moran's I, had you?

A That's correct.

Q And you'd never heard of the Local Moran's I either, had you?

A That's correct.

Q Now, Professor Goedert, you received your Ph.D.

three years ago; correct, sir?
A Four years ago. 20 -- I guess it was slightly more than three years. It was in 2012.
Q All right. Now, you're being paid $175 an hour for your testimony here today; correct, sir?
A Yes.
Q Now, in your opinion, Professor Jackman has an excellent reputation in political science, particularly in dealing with quantitative methodology in developing statistical packages for use in political science; isn't that correct?
A Yes, I would agree with that.
Q You consider his reputation in the field to be excellent; correct?
A I do.
Q His peers consider him to be an authority in his field; correct?
A Yes.
Q And you've relied on his work in constructing your own models, haven't you?
A I have.
Q And in your opinion, Professor Mayer is experienced in the political science field of elections; correct?
A I am less specifically acquainted with Professor Mayer's work, but I am aware of him by reputation.

Q Let me ask it again. In your opinion, Professor Mayer is experienced in the political science field of elections; correct?

A Yes, I would say he's experienced.

Q And you consider him qualified and experienced to render opinions in this case, don't you?

A I have no reason to believe he's not qualified. I am unaware of his specific research into congressional districting, if he has any.

Q And so you do --

A Or I'm sorry, legislative districting.

Q So you do consider him to be qualified and experienced to render opinions in this case; correct?

A I suppose so, yes.

Q Now, your published work on redistricting has focused on congressional, not state legislative redistricting; correct?

A Yes.

Q And in fact, you've only examined congressional elections in your redistricting; correct?

A That's correct in terms of the data that I relied on, yes.

Q Now, at the time of your deposition you weren't familiar with the work of Roland Fryer and Richard Holden in simulating plans with compact districts; were you?

A I believe that's correct.
Q At the time of your deposition, you weren't familiar with the work of Adam Cox, John Freedman or Richard Holden on optimal gerrymandering, were you?
A I believe that's correct.
Q At the time of your deposition, you didn't know what Wisconsin's state constitutional requirements were for state legislative redistricting plans, did you?
A I don't believe that I could recall specifically during the deposition. I think that's correct.
Q And you've never written anything about clustering analysis; correct?
A No, I have not.
Q Now, the definition of partisan gerrymandering that you use in your work is a redistricting plan which is done under the complete control of one party; isn't that correct?
A This is how I code for whether a state is considered a partisan gerrymander. It's the process under which the lines were drawn. This is certainly not a legal conclusion as to whether I think it is a constitutional gerrymander. It is certainly also not a conclusion as to the effectiveness of the gerrymander or the intent behind the drawing of the lines --
Q Is that --

A -- or the procedural definition.
Q Professor Goedert, the definition of partisan gerrymandering that you use in your professional work outside of the courtroom is a redistricting plan which is done under the complete control of one party, unified party control; isn't that correct, sir?
A Yes, that's correct.
Q Now, in the context of how you code partisan gerrymandering in your work, and this your academic work outside of the courtroom, you code Wisconsin's plan Act 43 as a partisan gerrymander, don't you?
A Well, because my academic work deals with congressional elections, I don't code the State Assembly plan because it's not part of my dataset. But I would code it, if I was going to use that definition, as a Republican gerrymander if I was going to do -- based on what I know about the facts, which I have no particular inside knowledge of.
Q Now, you believe the impact of a map is the result of intentional acts by the people who were drawing the map in addition to several other variables; isn't that true?
A I think that's a fair characterization, but there are many variables which impact the effectiveness of a map.

Q And you also believe there's intent behind the drawing of legislative maps and you're sure that's true in the case of Act 43 as well; isn't that true?

A I'm not sure why you would conclude that I would say that I'm sure that there's a particular intent behind the drawing of Act 43. I don't think I've offered any sort of opinion as to that one way or the other.

Q Do you recall having your deposition taken?

A I do.

Q And you remember that you were sitting in a conference room and you were being asked questions by Mr. Earle?

A I do.

Q And you were under oath when you did that; right?

A Yes.

MR. POLAND: I'd like the record to reflect I'm going to hand Professor Goedert a copy of his deposition transcript. For the record, Professor Goedert's deposition transcript is Exhibit 130. And Counsel, I'm going to draw your attention to page 42.

Q And there's a little bit of a Q and A here. Begins at line 42 -- I'm sorry, page 43, line two. And this is a question being read back:

"Question: And you're not going to be rendering any opinion as to whether the impact of Act 43 was the

intentional result of the design of Act 43; correct?

"Answer: Certainly I believe that the impact of a map is the result of intentional acts by the people who were drawing the map in addition to several other variables. I believe there is intent behind the drawing of legislative maps and I'm sure that's true in this case as well."

Professor Goedert, were you asked that question? Did you give that testimony?

A Yes.

Q Now, Professor Goedert, in this case we've heard about two ways to calculate the efficiency gap: The full district-by-district method and a simplified method. You would agree that the simplified method is an appropriate and useful shortcut measure of the efficiency gap; isn't that correct?

A Yes, I would in most contexts.

Q And, in fact, in your report in this case you use the simplified method to calculate the efficiency gap, don't you?

A Yes.

Q You would characterize a responsiveness of 2 as the average responsiveness compared to historical trends or historical averages; isn't that correct?

A This is what I have found in my research over the

past 40 years.

Q And the linear method you used in your work estimates an average slope or responsiveness of 2.02 for the past 40 years; isn't that true?

A Yes. Again, in my own work for the most part I don't use the linear method, but when I do calculate the linear method, it does generate a slope over the last 40 years that is very close to 2.0.

MR. POLAND: Could we bring up Exhibit 132, please. I'm sorry, could we bring up Exhibit 548, please. Same thing. Better copy. And could we turn to Figure 1 in 548, Exhibit 548. It should be on the third page of the document. There we go. Could we bring the slope up. Not quite that far.

Q Now here you've coded different plans, correct, or plotted different plans?

A Well, this is not a plot of different plans, this is a plot of the national vote share in a given congressional election compared to the national seat share that a party won.

Q And these are congressional elections; right?

A These are congressional elections.

Q Where would Act 44 fall?

A Well, it wouldn't fall anywhere on this map because this is a -- this is coding congressional elections and

thus it's producing an average slope for congressional elections, not for state legislative elections. I mean if you're asking me where would a congressional election where the seat share was the same as the seat share under the legislative Assembly election in Wisconsin compared to the vote share, is that what you want me -- I'm sorry. Are you asking me where a congressional election with the same vote and seat share that was produced as the legislative outcome in 2012 in Wisconsin would appear on this map?

Q I'm asking you where Act 44 would fall.

A I'm not sure I can answer that because this is a chart of national congressional election results.

Q Do you know what Act 44 was?

MR. KEENAN: Object. It's confusing. Act 44.

BY MR. POLAND:

Q Do you know what 2011 Wisconsin Act 44 is?

MR. KEENAN: Act 43?

MR. POLAND: I'm asking about Act 44.

THE WITNESS: I do not know what Act 44 is.

BY MR. POLAND:

Q So you don't know that that was the statute that was adopted in Wisconsin that adopted congressional districts.

A Okay. I was unaware of the number of the Act.

Q Okay. So you are not familiar with that Act; is that correct?

A I was not -- I am familiar with the congressional districts in Wisconsin. I was not familiar with the number of the Act that adopted them.

Q Okay. And you weren't familiar with the litigation that happened a few years ago over Act 44 as well?

A I am vaguely aware that there was some litigation, but I'm not -- not in any detailed way.

Q Do you know where Act 44 would fall on your slope? Would it fall above or below the line?

A Well, I believe that I have a table that shows Wisconsin's electoral results, if Wisconsin is a "y" in the table, later in the article which shows the result of Wisconsin's congressional elections. So if you're talking about 2012, that would be found in this article later on in the article. If you're talking about 2014, that would be found in the subsequent article that I published. I don't know what the numbers are off the top of my head. If you bring up the table, I would be happy to locate it.

Q On page four of the same article --

MR. POLAND: Could we bring up -- I think it's Table I or Roman Numeral I. And could we enlarge -- that's right. At the very top. Table I. Just the top

portion of it. There we go.

Q All right. So Professor Goedert, you see where Wisconsin falls on the table?

A Yes.

Q All right. And you code Act 44 as a Republican gerrymander, don't you?

A Yes.

Q And it's a negative 15 percent; correct?

A Yes.

Q All right. So on the slope that we had identified, and we can go back to Figure 1 that we were just on, it would fall below that line; correct?

A Yes, it would fall below the line.

Q Republican advantage.

A Yes.

Q You've coded it as a Republican gerrymander; correct?

A Yes.

Q Now, are you aware that in the *Baldus v. Government Accountability Board* lawsuit that was filed and tried in the federal court in Milwaukee in 2012 that there were certain plaintiffs that filed a constitutional claim over Act 44?

A I am aware that that litigation existed.

Q And are you aware that one of their allegations was

that Act 44 gave Democrats or gave Republicans an unfair electoral advantage in an attempt to preserve their political majorities?

A I'm not specifically aware --

MR. KEENAN: I'm just going to object to the relevance of these questions. Is this going anywhere? I mean there was a lawsuit in 2012 on the congressional districts?

JUDGE RIPPLE: I think we will allow it. The objection is overruled. We'll allow the train of questioning to continue.

MR. POLAND: And then Your Honors, I'm reading from the published *Baldus* opinion. This is 849 Fed. Supp. 2d. 840 and I'm going to read from page 854. And then the *Baldus* court held the following: "To the extent that the point is about process rather than results, we add that our review of the drafting of Act 44 leads us to believe that it was a significantly more biased partisan process than that associated with the drafting of Act 43."

Were you aware of that?

A I was unaware of that part of the opinion.

Q All right. Do you know where Act 43 would fall in this line?

MR. KEENAN: Object as vague.

BY MR. POLAND:

Q Do you know where Act 43 would fall in relation to the slope that you've --

MR. KEENAN: There's been two elections under Act 43.

BY MR. POLAND:

Q Do you know where it would fall?

A Well, these are data points for single-election cycles, single-election results. So are you asking about a specific year?

Q I'm asking for the first year after --

A In 2012.

Q -- 2012.

A Well, if you --

JUDGE RIPPLE: For the record your objection is overruled. You can train -- the questioning can continue.

THE WITNESS: If you were to plot the statewide vote share in Wisconsin for Assembly districts against the statewide seat share, it would fall below the line. But this line is for average of national congressional elections and not for State Assembly elections.

BY MR. POLAND:

Q Now, Professor Goedert, you only submitted the one report in this case; correct?

A Correct.
Q And that was in December of 2015?
A Correct.
Q You never asked to -- you were never asked -- I'm sorry -- strike that.
You never asked to prepare a supplemental report, did you?
A I guess that's correct.
Q And you never were asked by counsel to prepare a supplemental report, were you?
A Correct.
Q That was after you had both Dr. Mayer's and Dr. Jackman's rebuttal reports; correct?
A Yes.
Q You've repeatedly yourself calculated plans' biases by comparing the parties' actual seat shares to their expected seat shares given the responsiveness of 2; correct?
A That's not exactly correct given that my model does not use the linear model. It uses a probit model, which again is similar to the linear model within a particular range of election results.
Q Let me ask the question again: You have yourself repeatedly calculated plans' biases by comparing the parties' actual seat shares to their expected seat shares

given a responsiveness of 2; correct?

A That is not precisely correct.

Q All right. I'd like you to pick up your deposition transcript again. This is Exhibit 130. Let's go to page 72. And begin reading from line 20.

"Question: Okay. And you have yourself repeatedly calculated plans' biases by comparing the parties' actual seats to their expected seat shares given a responsiveness of 2; correct?

"Answer: Yes.

"Question: And that is essentially identical to the efficiency gap; correct?

"Answer: Yes."

You were asked that question and you gave that answer, didn't you?

A Yes.

Q And you were under oath when you gave that answer; correct?

A Yes.

Q Now, Professor Goedert, for reasonably competitive elections, your measure of bias is nearly identical to the simplified form of the efficiency gap, isn't it?

A Yes.

Q Now, you testified in your direct examination that in recent years the responsiveness exhibited by

congressional plans has shrunk; correct?

A Yes.

Q Do you know what responsiveness Stephanopoulos and McGhee find for congressional plans since 1992?

A Off the top of my head this is -- I'm sorry, can you repeat the question?

Q Certainly. Do you know what responsiveness Stephanopoulos and McGhee find for congressional plans since 1992?

A I don't know off the top of my head. I believe that it's -- they find that it's close to 2.

Q So do you know that the responsiveness is 2.20?

A I believe that that's what they find, if that's what you're telling me.

Q And you don't have any reason to disagree with that; correct?

A I don't have any reason to believe that their calculation is wrong.

Q All right. Do you know what responsiveness Stephanopoulos and McGhee find for congressional plans since 2002?

A I do not off the top of my head.

Q Do you know that this responsiveness is 2.19?

A I don't know that, but I don't dispute that.

Q Do you know what responsiveness Professor Jackman

finds for state legislative plans since 1992?
A I believe that he finds that it's close to 2.
Q And do you know whether it's 2.18?
A That is very plausible.
Q You have no reason to dispute that; correct?
A I have no reason.
Q Do you what responsiveness Professor Jackman finds for state legislative plans since 2002?
A I don't know that.
Q Do you know that response is 2.11?
A I would believe that.
Q Do you have any reason to dispute that?
A I don't have any reason to dispute that.
Q Now, in your work that you went over before, gerrymander or geography, you assume that a party should expect to win a proportion of seats in line with historical patterns found in modern congressional elections; isn't that true?
A Well, it depends what you mean by should. I observed that the parties want a different share of seats than we might expect given historical averages and so the article is in some ways trying to unpack that or explain it. It is not a sort of a normative judgment that a party should win "X" number of seats given "Y" amount of vote, merely that given historical averages it is outside

of the historical average if they don't conform to that particular expectation.

MR. POLAND: Could we bring a copy of Exhibit 132 up on the screen, please. And I'd like to turn to page two. It's actually three of the document, but it's page two and --

JUDGE RIPPLE: Would you say what Exhibit 132 is?

MR. POLAND: Yes, it's Exhibit 132, Your Honor.

JUDGE RIPPLE: And what it is?

MR. POLAND: Yes. This is Dr. Goedert's article called *Gerrymander or Geography*.

JUDGE RIPPLE: Thank you.

MR. POLAND: And could we zoom in on the right-hand column. There we go. And I'd like to scroll a little further down, starting at the sentence that begins "Rather." Could you highlight the sentence that begins "Rather."

BY MR. POLAND:

Q Can you read that sentence, Professor?

A "Rather, we will assume that a party should expect to win a proportion of seats in line with historical patterns found in modern congressional elections."

Q In fact, why don't we have you read the first part of that paragraph beginning with *Tufte*.

A "Tufte proposed that a system of districting must pass two tests to be minimally Democratic. First, it must be responsiveness" -- sorry -- "responsive such that an increase in votes for one party will translate into an increase in seats; and secondly, it must be unbiased in treating both parties alike. We will" -- should I continue.

Q Yes, please.

A "We will therefore start from the premise that a fair assignment of seats to parties will not be biased in favor of one party but will also not require proportional representation."

Q And so your analysis that you're setting out there starts from the principle that a system of redistricting must be responsive; correct?

A Yes.

Q And that it also must be unbiased in terms of treating both parties alike.

A Yes.

Q Now, Professor Goedert, in your view if you were being asked what the likelihood is that an efficiency gap would persist throughout potential future elections in the decade, you would want to develop some sort of measure for the plausibility of overall electoral environments; isn't that correct?

A I think that's fair.
Q And you'd also recommend applying a uniform-swing assumption to determine the plausibility of future electoral environment; isn't that true?
A I think that would be a reasonable assumption. I don't think that's a necessary assumption. I think there's other methods that could be used for that, but I think that's reasonable.
Q All right. You'd recommend it though; correct?
A Again, I think it's a reasonable assumption.
Q And it's something you would recommend; correct?
A It's something I have done in my own research.
Q And that you would recommend.
A Sure.
Q Now, in performing your uniform-swing assumption, you would base that analysis on past election data; correct?
A Yes.
Q And if you were asked the empirical question of what the likelihood is that an efficiency gap will endure to be the same sign in future election results, you would want to figure out the range of possible overall statewide election results; isn't that correct?
A Yes.
Q In working out those results, you might want to

deviate more in one direction than another; isn't that correct?

A Yes. Given one particular election result where it falls in the range of possible election results, I think you might want to deviate more in one direction than the other.

Q And you'd want to come up with some sense of where that particular election result lay on the range of possible election results; isn't that correct?

A Yes.

Q And if you did this sensitivity testing, you would think the results give you a fairly accurate estimate for the likelihood that an efficiency gap would persist through the decade; isn't that correct?

A Yes. I think that would be the best way to do that sort of sensitivity testing.

Q Now, you would agree that the partisan score used by the map drawers and Professor Gaddie in 2012 was based on prior election indicators of future election performance; correct?

A I believe that's true.

Q All right. So Professor Goedert, I'd like to go back to your articles and I'm going to have you get exhibits -- I'm sorry, we'll be ready with Exhibits 132 and 133. We'll have to pull them up on the screen.

Now, your articles, both your 2012 article and your 2014 article, they both include certain models; correct?

A Yes.

Q And your models reflect modern political science techniques; correct?

A Yes.

Q Now, your model makes predictions or covers predictions for 2012 and 2014; correct?

A I don't know that I would describe them as predictions because the election had already happened. So they are measures of average effects of variables on this election.

Q Let me ask it a different way: Predictions for 2012 and 2014 are covered by the model; correct?

A Those are the election cycles that are covered by the model. I wouldn't describe them as predictions.

Q Could we take a look -- get your deposition out again. Exhibit 130, please. I'd like you to turn to page 77. Are you there, sir?

A Yes.

Q Page 77. Beginning at line four:

"Question: So predictions for 2012, 2014 are covered by the model; right?

"Answer: Yes. That is what is covered" -- I'm sorry. "That is what covered" -- I think there should be

an is in there. "That is what is covered by the model."

Were you asked that question and did you give that testimony?

A Yes.

Q Now, you would characterize your model as reliable for 2012 and 2014; correct?

A Yes.

Q Your model includes a number of independent variables; isn't that correct?

A Yes.

Q All right. Now, I'd like you to go to -- let's keep Exhibit 132 up on the screen. And if we could turn to page seven, Table 2.

Now, one of the independent variables is Democratic control over redistricting; isn't that correct?

A Yes.

Q And that's under the line here *Democratic gerrymander*; correct?

A Yes.

Q And it's gerrymander because you have used unified control and coded that as a gerrymander; correct?

A Yes.

Q Now, in your 2012 analysis you find that Republican control over redistricting is a predictor of bias in only two of your three models; isn't that correct?

A It is a significant predictor of bias in two of the three models.

Q And you find that Democratic control over redistricting is a statistically significant predictor in all three models; correct?

A It depends on your standard of statistical significance, but yes, under the lowest level standard of statistical significance -- under the P is less than .10 standard, it is significant in all three models.

Q And you've laid that out. In fact, you've identified your standards of statistical significance right below Table 2; correct?

A Yes.

Q Now, your model suggests that holding political geography constant, both parties benefited themselves through gerrymandering in 2012; isn't that correct?

A Yes.

Q Now, Professor Goedert, when the vote share is between 40 percent and 60 percent, the dependent variable in your model will be fairly close to the efficiency gap; isn't that correct?

A Yes.

MR. POLAND: I'd like to bring up the joint final pretrial report, please. And I'd like to bring up paragraphs 257 and 258 and display those two on the

screen. And we'll just represent to the Court that it is a stipulated fact that the vote share in Wisconsin in 2012 and 2014 was between 40 and 60 percent. And if we look at paragraph 257, in 2012 it was 51.4 percent and in 2014, it was 48 percent.

Q And do you see both of those on the screen in front of you, Professor Goedert?

A I do.

Q Now, the bias that your model predicts in 2012 and 2014 if Wisconsin had a bipartisan court-drawn plan would be Democrat in both years; isn't that correct?

A Well, the model wouldn't apply to the State Assembly map, the model is for congressional seats.

Q Professor Goedert, you certainly cannot confidently say there was a Republican bias generated from your model; isn't that correct?

MR. KEENAN: Object as vague.

THE WITNESS: I don't understand the question. I don't know how to answer it.

JUDGE RIPPLE: Please rephrase.

BY MR. POLAND:

Q You cannot confidently say that there is a Republican bias generated from your model; isn't that correct?

A Which model are you referring to?

Q 2012 and 2014.
A But which model?
Q The model that's reflected in your analysis in your paper.
A There are multiple models in each paper.
Q Let's go to your deposition.

MR. POLAND: Exhibit 130, please. And we're going to go to page 86. Now, I'm referring to your model's prediction for Wisconsin in 2012 and 2014, if we assume a court-drawn or bipartisan plan was in place. And reading, beginning page -- this is page 86, beginning line 17.

Q "Question: There is no Republican bias?

"Answer: I certainly could not confidently say that there is a Republican bias generated from the model, yes."

You were asked that question and you gave that answer; correct?
A This is in response to the attorney from your side asking me to impute numbers from the State Assembly results in Wisconsin onto my model of congressional elections which I repeatedly stated in the deposition was not an appropriate use of the model.
Q Right.
A I did state this, yes.

Q Let's go up to the top then or let's begin -- let's begin at the top of page 86.

JUDGE CRABB: Well, that's -- I think that's not going to be helpful either because that just talks about your models.

MR. POLAND: All right. Let me go on to a different question here.

BY MR. POLAND:

Q It's true, isn't it, that in 2012 Wisconsin was 6.6 percent black, 6.5 percent Hispanic, 70.2 percent urbanized, had a statewide Democratic congressional vote share of 51 percent and had eight districts; correct?

A That sounds accurate to me. What was the -- I'm sorry -- what was the vote share variable you stated?

Q 51 percent.

A Was that congressional vote share?

Q Correct.

A Okay. That sounds correct.

Q And in 2014, all of these figures were the same, but Wisconsin had a statewide Democratic congressional vote share of 48 percent; correct?

A Well, the minority share of the population might be slightly different, but I think it's reasonable simplification, yes.

Q And if we plug these values into your models and if

we assume that Wisconsin's map was drawn by a court, a commission or by a divided government, we get a small pro-Democratic bias, don't we?

A Yes. This is for the model of congressional elections; right? So this would be for seats that are as large as congressional seats. That's what the model is intended to predict.

Q And you wouldn't say we get a pro-Republican bias; correct?

A That's correct, for imputing that data into my model of congressional elections.

Q Now, Professor Goedert, at the time you were deposed in December, you had no idea what the relative contribution to Republican bias in Wisconsin is as a result of political geography; correct?

A I don't believe I had a precise estimate in mind or had calculated that specifically.

Q And it wasn't in your expert report, was it?

A No.

Q And at the time that you were deposed in December, you hadn't tried to determine what portion of Wisconsin's efficiency gap is due to political geography and what portion is due to greater Republican control of the redistricting process; correct?

A That's correct.

Q In the report that you submitted in December in this case, you did not attempt to simulate nonpartisan districts, did you?

A That's correct.

Q In your report you presented the distribution of 2012 presidential election results at the ward level; correct?

A Correct, with the uniform-swing assumption applied.

Q You anticipated my next question.

A Sorry.

Q To present your distribution, you used the uniform-swing assumption to simulate a tied election; correct?

A Yes.

Q And that analysis is set out in your report; correct?

A Yes.

Q And in fact, we looked at that when Mr. Keenan was questioning you; correct?

A That's correct.

MR. POLAND: Let's bring up Exhibit 136, please. And I'd like to go to -- I believe it's on page 21. I'm sorry, page 22, Figure 1. Now, could we also bring up Exhibit 15, that's Dr. Mayer's -- I'm sorry, that's a chart. And could we put those side by side?

Q Professor Goedert, do you recognize the document that is now appearing on the screen -- should be on the left -- it's identified as Exhibit 136?
A I do.
Q And that's the chart from your report, correct, on page 22?
A That's correct.
Q Do you identify -- do you recognize the document that's on the right side of the screen that's labeled Figure 12?
A I believe this was shown to me at my deposition. It looks like a figure that was shown to me at my deposition, so I believe I do.
Q Do you understand that comes from Dr. Mayer's report?
A I believe that's right.
Q Do you know what Dr. Mayer is portraying there?
A I do.
Q Okay. And so you know that that is Act 43 baseline partisan measure?
A That sounds correct, yes.
Q Is it fair to say that the district distribution under Act 43 does not look like the ward distribution in your histogram which is Exhibit 136?
A I believe they're similar in many ways and different

in some ways.

Q And it's fair to say that the distribution under Act 43 does not look like the ward distribution on your chart; correct?

A Again, I believe they're similar in some ways and different in others.

Q Now, you would agree that the district distribution has a substantially more pro-Republican direction than the ward distribution, wouldn't you?

A Okay. The table has disappeared. I wasn't sure if --

Q Can we bring those back up on the screen, please?

A There are a greater share of districts which fall into the very marginally Republican bin or two bins in Professor Mayer's diagram than there are a share of wards. I believe this was already discussed in my -- in the testimony I gave in response to Mr. Keenan.

Q And so you agree with me that there's a greater percentage of districts that -- strike that question -- that the district distribution is substantially more skewed in the Republican direction; correct?

A In the sense that there are more -- a greater percentage of districts which fall to the Republican side of the 50 percent line than there is share of the wards, I believe that is correct.

Q Now, Wisconsin's underlying geography is not accurately reflected in the current districts of Act 43; isn't that true?

MR. KEENAN: Object as vague.

JUDGE RIPPLE: Could you rephrase that for us, please.

MR. POLAND: Sure.

BY MR. POLAND:

Q Wisconsin's underlying geography is not accurately reflected in the current districts of Act 43; isn't that true?

MR. KEENAN: Object as vague.

JUDGE RIPPLE: The same question?

MR. POLAND: It was answered at the deposition. He answered it there. I'd be happy to go to the deposition transcript if we need to.

THE WITNESS: I'm not sure how I would respond to that question.

BY MR. POLAND:

Q Why don't we get your deposition up.

A Sure.

MR. POLAND: This is Exhibit 130.

MR. KEENAN: I note that in this deposition I note as vague. So I renew my objection at the time of trial.

JUDGE RIPPLE: Let's look at the deposition in context.

MR. POLAND: That's fine or -- that's fine. If you would like me to rephrase the question, I could do it, Your Honor.

JUDGE RIPPLE: I think it probably would be a good idea, yeah.

BY MR. POLAND:

Q It's true, isn't it, that the distribution of partisanship in the districts in Wisconsin is not identical to the distribution of partisanship of the wards?

A That's true.

Q And the district distribution is noticeably more skewed in the Republican direction than the ward distribution as we just established; correct?

A Yes. I think I already answered that question.

Q Do you know when Wisconsin's current wards were drawn?

A I do not.

Q Isn't it true that Wisconsin's current wards were drawn after Wisconsin's current districts were drawn?

A I was not aware of that, but I believe it.

Q In fact, isn't it true that municipalities were ordered by law for the first time in Wisconsin history to

draw their wards to comply with preexisting district lines?

A I don't know.

MR. POLAND: Could we bring Exhibit No. 136 back up on the screen and go again to page 22. Could we pull that up?

Q Professor Goedert, in your direct examination you talked quite a bit about packing, didn't you?

A Yes.

Q I didn't hear you mention the term cracking. Is that a term you're familiar with?

A Well, yes, it is.

Q Now, I think that you had identified that in the chart that we see -- in the bar chart that we see on the screen in front of you, the histogram, if we look at the 40 to 50 percent range, we see -- I think your testimony was that the highest number of Democrats there are in a ward that is marginally Republican; correct?

A I'm sorry. The highest number of Democrats are in a ward --

Q Most concentration.

A This doesn't show the share of Democrats in a particular ward, it shows the number of wards that are a particular share Democratic.

Q And the highest level is in the 40 to 50 percent

range; correct?
A It's showing that the greatest number of wards and the greatest share of population is in wards that are 40 to 50 percent Democratic in a tied national election.
Q And those are wards that I believe that your testimony was are marginally Republican; right?
A Right.
Q And that could be evidence of cracking right there; correct?
A I'm sorry, these are -- these are wards. I don't understand how wards would be cracked.
Q I'll withdraw the question.
Now, you're familiar with the work of Professors Chen and Rodden on unintentional gerrymandering; correct?
A I am.
Q And in fact, you have cited their work in your expert report in this case; correct?
A Yes.
Q Now, you've never produced simulated plans like Professors Chen and Rodden, have you?
A That's correct.
Q But you do agree that one way to analyze the partisan implications of a state's political geography is through district simulations like those conducted by Professors Chen and Rodden; correct?

A That's correct.
Q In your expert report, you cite to Chen and Rodden for the proposition that political geography explains large efficiency gap in Wisconsin in 2012; correct?
A I believe so, yes.
Q And that's in your report; correct?
A Yes.
Q Are you aware that Professor Chen has prepared a paper, currently publicly available and forthcoming in the *Election Law Journal*, that concludes with high statistical certainty that neutral nonpartisan districting criteria combined with Wisconsin's natural political geography would not have produced a districting plan as electorally skewed as the Act 43 Assembly plan?
A I am aware of his paper.
Q And have you read it and are you aware of those conclusions?
A I became aware of it just a few days ago. I don't know how recently it was posted. I have skimmed over it and I am generally aware of the conclusions. I have not inspected it in any, you know, great detail.
MR. POLAND: Could we bring up Exhibit 156, please. Can we go to page 11, please.
JUDGE RIPPLE: For the record, would you please identify the exhibit?

MR. POLAND: This is Exhibit 156, Your Honor.

JUDGE RIPPLE: No, what it is.

MR. POLAND: I'm sorry?

JUDGE RIPPLE: What it is.

MR. POLAND: This is the Chen paper, the forthcoming publication.

MR. KEENAN: We have an objection to the admission of this exhibit. But I'm not objecting to asking the witness questions about the existence of the paper.

JUDGE RIPPLE: Understood.

MR. POLAND: Could we go to the last sentence of the second paragraph, please. Could we highlight that sentence.

BY MR. POLAND:

Q Professor Goedert, could you read that into the record, please.

A "The improbable nature of the Act 43 efficiency gap allows us to conclude with high statistical certainty that neutral nonpartisan districting criteria, combined with Wisconsin's natural political geography, would not have produced a districting plan as electorally skewed as the Act 43 Assembly plan."

MR. POLAND: Can we bring up Exhibit 158, please.

MR. KEENAN: Are there any questions about this or is he going to read the paper into the record?

MR. POLAND: I've asked to have Exhibit 158 brought up.

MR. KEENAN: Okay.

BY MR. POLAND:

Q Now, do you recognize -- this as Figure 3 from the Chen paper, which is Exhibit 156?

A It does look like a figure that was in the paper. Again, I didn't read the paper in any great detail yet.

Q So even though you had cited their earlier work, you didn't think to go back and see if Professor Chen had done any followup work?

A I am unsure if whether the paper was available at the time that I submitted the report.

Q Well, you were able to look up the isolation index two weeks ago; correct?

A Correct.

Q Do you know whether Professor Chen's paper was available two weeks ago?

A It probably was. I don't know when it was available. It's listed as forthcoming in 2017, I believe.

Q Do you know whether it's publicly available?

A I believe, yes. That's where I found it on his

website.
Q When did you find it on his website?
A Couple days ago.
Q Did you even look for it before then?
A I was unaware of its existence.
Q Did you think it might be relevant to look and see whether Professor Chen had done any followup work on Wisconsin specifically when you had cited his earlier work from other states?
A At some point I did look to see if he had done any specific work on Wisconsin and at that point he had not. I don't check daily to see whether a specific person has done work on a specific state.
Q Have you ever talked to Professor Chen?
A I have talked to him.
Q Do you know him?
A Only a little bit.
Q Could you have called him up and asked him about his work and whether it was appropriate to use it in this case?
A I suppose I could have called a number of people.
Q Okay. Let's take a look at Figure 3. This is Exhibit 158 that's on the screen in front of you. Do you see that?
A Yes.

Q And under this chart, Act 43 is an outlier from the 200 simulated plans that Professor Chen has drawn; correct?

A That looks like what this table is showing. Again, I don't -- I'm only vaguely aware of the paper, so you're asking me about specifics of a table I don't know the specifics of.

MR. POLAND: No further questions at this time.

JUDGE RIPPLE: Thank you, Mr. Poland. Do you anticipate a long redirect?

MR. KEENAN: No, it's a short redirect. We probably could finish it, then take the normal afternoon break.

JUDGE RIPPLE: Sure. Mr. Keenan, go ahead.

REDIRECT EXAMINATION

BY MR. KEENAN:

Q Professor Goedert, some deposition testimony came in that said -- you gave an answer, I'm just going to read it, this is page 43, line six to nine of your deposition. I guess you have it there, you can read it.

A I do.

MR. POLAND: I'm sorry, Counsel, what page?

MR. KEENAN: Page 43. Lines six to nine was an answer to a question that you had gone over with Professor Goedert.

MR. POLAND: I'm sorry, is there a question pending?

MR. KEENAN: I just wanted him to read the answer.

THE WITNESS: You want me to read the answer?

BY MR. KEENAN:

Q Yes.

A "Certainly I believe that the impact of the map is the result of intentional acts by the people who were drawing the map, in addition to several other variables."

Q Okay. What were the other variables that you think go into the effect, the impact of a map?

A Well, sure. Obviously geography would be one. Obviously various legal constraints would be another. Certainly the actual electoral tide or overall electoral environment in a specific election. The candidates that are running for office, whether they're incumbents, whether they're high quality candidates. There are almost, you know, there are potentially a thousand variables that could come into the effectiveness of a map when it comes to electoral results.

Q We're going to pull up your gerrymander, your geography article which we've marked at Exhibit 548. I believe the plaintiffs have been referring to a different number. But you had been asked some questions about how

you code things as gerrymanders and I believe you were trying to explain what you meant by that. Maybe it hasn't gotten out. Can you explain what you mean when you code something as a gerrymander?

A Right. So I am referring to something as a gerrymander, not in any sort of -- with any sort of moral judgment or even evaluating its effectiveness, I'm simply coding it as a gerrymander to reflect the process under which it was drawn. So any map in which one party controlled the Legislature, in, say, both Houses of the Legislature, if it was a legislatively drawn map and presumably the governorship would be coded as a partisan gerrymander regardless of the actual intent behind the map, regardless of the effectiveness behind the map, and regardless of any sort of legal conclusion that I would draw about the map.

Q And I notice we have -- the table you looked at with Mr. Poland here, it's Table 1, I believe, on page four. I see you also refer to bipartisan or court gerrymanders. What do you mean by that?

A Well, so bipartisan, I take a court gerrymander is somewhat self-explanatory. It's a map that's drawn by a court.

Q And those usually aren't referred to as gerrymanders, but you're still coding that as a

gerrymander?

A Right. I call everything a gerrymander. It's just shorthand. A bipartisan gerrymander would be a map that is typically drawn by a legislature, drawn by the normal legislative process. But, for instance, where there is bipartisan control of the various Houses, for instance, the Democrats control the lower House and the Republicans control the upper House or the Democrats control both Houses and the Republicans control the governorship, where it is necessary for both parties to agree to a map before it can be passed.

Q Okay. And then Mr. Poland -- this is the last series of questions. Mr. Poland asked you about the models in this article and then there's also a 2014 article. You recall that?

A Yes.

Q And there's the variables of the racial minorities and urbanization and things like that. Do you think those models used to predict, not predict maybe, but used to explain congressional elections can be used to explain state legislative elections?

A Certainly the actual model that I use in this article would not be appropriately applied to state legislative elections.

Q And why not?

A Well, for one thing congressional seats are much much larger than State Assembly seats in most states. Certainly in Wisconsin I believe a congressional district is more than ten times as large as a State Assembly seat. So if you're looking at, for instance, the impact of urbanization; right? A city needs to be fairly large in order to encompass almost an entire congressional district. So there's really only one city, for instance, in Wisconsin, Milwaukee, that is going to encompass almost an entire congressional district. So most congressional districts are going to have to have a whole lot of different small cities in Wisconsin, whereas in a larger state with larger cities you might have multiple cities that would compose single congressional districts; you might have cities that are large enough to compose multiple congressional districts, and so the impact of urbanization that you would observe in Wisconsin might be different for congressional maps than it is for State Assembly maps because most of the cities in Wisconsin are much closer, I think, to the size of a State Assembly district than they are to a congressional district. And so where you might not see a huge impact of urbanization in congressional maps in Wisconsin, you might see a much larger impact when it comes to State Assembly maps.

MR. KEENAN: Those are all my questions.

JUDGE GRIESBACH: Professor, in that exhibit, Figure 1 in your report, where you show the Democratic vote share of wards, I take it you got the data or the data for those consists of the actual ward votes for the 2014, 2012 election?

THE WITNESS: That's right.

JUDGE GRIESBACH: Is that part of -- is that part of the record here?

THE WITNESS: So I actually took those from the datasets that were submitted by Professor Mayer. So I believe they are in the record.

JUDGE GRIESBACH: And those are pretty much publicly available, aren't there?

THE WITNESS: They should be publicly available, yes.

JUDGE GRIESBACH: As well as the 2010 wards, we can see what the wards look like on the previous -- before they were redrawn under Act 43?

THE WITNESS: I would imagine so, but I don't know. I haven't --

JUDGE GRIESBACH: Are those part of the record, Counsel? And do you have any objection to our taking notice of them if they're publicly available?

MR. POLAND: I don't know, Your Honor, whether they are part of the record. But we certainly have no

objection if the Court --

MR. KEENAN: I would have the same answer. I think some of that data, like Professor Mayer created, was provided to us and then provided to Professor Goedert to do this. I don't know that it's ever been provided to the Court. I just don't know. But I would have no issue with the Court having it or taking notice of it.

JUDGE GRIESBACH: Well, you have these graphic descriptions of actual votes. It might be helpful for us to see what the wards actually look like.

MR. POLAND: I know that we did have that certainly in the *Baldus* litigation, Your Honor.

JUDGE GRIESBACH: Could we ask counsel to advise us or make it part of the record? I think the two -- both since the wards were redrawn, it might be helpful to see what they looked like before and after.

MR. POLAND: I'm sorry, Your Honor, I don't mean to interrupt. I believe Dr. Mayer had those and probably still does have them. We would need to know the specific data in which the Court would like to have the data.

MR. KEENAN: I believe they're Excel spreadsheets and then there's like 6,600 lines, one for each ward, and then there's a lot of data in them.

MR. POLAND: We would need to do some validity testing on the data, as we saw the other day, Your Honor,

but I think we could obtain that.

JUDGE GRIESBACH: You know, particularly in the districts that you've been discussing in the concentrated areas, it might be more helpful than other areas. I realize that wards are different sizes and different populations but...

MR. POLAND: Yes, we can do that, Your Honor.

JUDGE RIPPLE: I think we'll take our 15-minute break. We'll recess, be back in 15 minutes. My colleague reminds me that the Court has one thing it needs to discuss. So let's make this a 20-minute break at least or 20 to 25-minute break to let the Court discuss a matter we may have to discuss with counsel.

(Recess 3:34-4:02 p.m.)

THE CLERK: This Honorable Court is again in session. Please be seated and come to order.

JUDGE RIPPLE: Mr. Keenan, you are finished with that witness? Do you have something else?

MR. KEENAN: I just have one small housekeeping thing is that we had a couple of exhibits we used that I never moved into evidence that I'd like to do now. Exhibit 575 was the party A/party B isolation index example, and then 581 was the document from the U.S. Census that had the formula for the isolation index. So those two documents I'd move into evidence.

MR. POLAND: No objection, Your Honor.

MR. KEENAN: And with that we would rest our case.

JUDGE RIPPLE: With that objection the exhibits are admitted. You rest your case. Do the plaintiffs plan on a rebuttal case?

MR. POLAND: Your Honor, we've been looking at the clock and we might have some rebuttal. That would be primarily to respond to some of the materials we received this morning from Mr. Trende, some of that new analysis. This is what we would propose to do as we sort of weighed the value of rebuttal versus closing arguments.

Our preference would be for each side to do about a 45-minute closing argument and if we -- I saw Your Honor wince. Okay. Let me address rebuttal first. We'd like to evaluate that. To the extent that we have any rebuttal, it appears the Court intends to take some written submissions. If we have any, we'd prefer to ask the Court's leave to be able to submit that as part of the written submission.

JUDGE RIPPLE: That being rebuttal?

MR. POLAND: Rebuttal, Your Honor, correct.

JUDGE RIPPLE: As part of the written submission.

MR. POLAND: Yes, Your Honor.

JUDGE RIPPLE: We very definitely do anticipate asking the parties for trial briefs -- post-trial briefs with written submissions. Mr. Keenan, how about you? How do you feel about all this?

MR. KEENAN: About them doing a written rebuttal?

JUDGE RIPPLE: Um-hmm.

MR. KEENAN: That's fine.

JUDGE RIPPLE: You would not have an opportunity to cross-examine.

MR. KEENAN: As long as I'd have a chance to also respond in writing, I think that would be fine. I mean if they submit something before the final pretrial brief is due or something like that where we'd get a chance to respond to it, but wouldn't have cross, that would be fine.

JUDGE GRIESBACH: What do you have in mind for rebuttal that we would see in writing?

MR. POLAND: Your Honor, I'm not exactly sure. I think what we'd need to do is look at some of the new material that we received this morning. There are some things that we can address over the lunch break and other things that we need a little bit more time to digest.

MR. HEBERT: And Your Honors, if I could pipe in, just one suggestion: The way we've done this in

other three-judge court cases is if we were to submit some rebuttal evidence, it would be in the form of a sworn declaration and if Mr. Keenan decided he needed to take a post-trial deposition of that witness, we could let him do that. That's the kind of thing that's been done in many, many other cases. That would be acceptable to us.

JUDGE RIPPLE: We will proceed that way then. We would like to proceed to closing arguments then today?

MR. POLAND: We would, Your Honor. There is one other housekeeping matter that we have and that is to -- the plaintiffs would like to formally move into evidence Exhibit 497, which were the last of the charts that were created from the flip chart.

MR. KEENAN: No objection.

JUDGE RIPPLE: That -- that exhibit is admitted.

MR. POLAND: Thank you, Your Honor.

JUDGE RIPPLE: We would, first of all on trial briefs, we would prefer that we have trial briefs within 14 days and we will allow for simultaneous replies ten days thereafter. And we -- were you about to say something?

MR. POLAND: I was going to ask a couple questions actually just on the logistics. Are there specific issues that the Court would like to have

addressed in the trial briefs?

JUDGE RIPPLE: The Court would like to have addressed what we have called the Chen issue and we would like that addressed in writing for sure. And we invite you to use your discretion with respect to other matters, particularly if there are other legal matters that you want to give us a more fulsome explanation of or update on, you should feel free to do that.

MR. POLAND: Does the Court anticipate something beyond addressing specific legal issues? I'm just thinking in terms of are there proposed findings of fact from the trial record that the Court is expecting to receive from the parties?

JUDGE RIPPLE: We're going to, I think, leave that at your discretion and -- but we certainly -- I think one of the things we would anticipate you would help us with is the evidentiary record. The organization of this trial has been somewhat different because several of the fact witnesses were presented at one time and we did not have such a clean situation of having the plaintiffs' case or the defendants' case and that is a situation that we have to wrestle with on unbundling the record and dealing with it and evaluating it. And to the extent that you were able to help us do that, it would be most appreciated.

MR. POLAND: Very well, Your Honor.

JUDGE RIPPLE: My colleagues tell me they would appreciate it if you could limit your closing arguments to 30 minutes a side. Do you think that's -- so let's try to keep it at that. Okay?

MR. POLAND: Very well, Your Honor.

JUDGE RIPPLE: And I'll let you proceed.

MR. POLAND: Thank you, Your Honor.

JUDGE CRABB: Let me just say one thing. The exhibit lists will be at the clerk's desk so if you want to check them over afterwards and see whether there are omissions or things that you think are not correct.

MR. POLAND: Thank you, Your Honor.

Your Honor, the plaintiffs' closing argument will be given first by Professor Stephanopoulos. We'd like to split the time between Professor Stephanopoulos and Mr. Hebert. (4:10 p.m.)

JUDGE RIPPLE: Professor.

MR. STEPHANOPOULOS: Your Honors. So in his opening statement a few days ago, Mr. Keenan said a couple things that struck me. First, he mentioned his grandfather's criticism of "people using statistics as a drunk using a lamppost for support rather than illumination." And second, he observed that plaintiffs' statistics are actually very illuminating. What

Mr. Keenan left unsaid though was a third point, which is the one I want to focus on now. And this is about plaintiffs' statistics do illuminate the intent of Act 43's drafters, the severity and the durability of Act 43's partisan asymmetry, and the unjustifiability of this asymmetry. I don't believe that we can say the same about the statistics we've heard from defendants. I would say that their statistics have been aimed at obfuscating, rather than illuminating, and I'll be providing the Court with some examples of that.

Before I get into any of the data about how any of the prongs of our proposed tests have been discussed over the course of trial, I want to just note at the outset that skepticism for statistics really has no place in this area in the context of redistricting. When you're dealing with the aggregation of millions of voters into dozens of districts, numbers are going to be a central part of the picture. That's true in the one-person one-vote context, it's true in voting rights cases where racial polarization in voting is a complicated and central inquiry. It's also why the drafters of Act 43 prepared these elaborate partisan composites, these very sophisticated S curves, and it's also why any tests for partisan gerrymandering, I think, will have to have some kind of quantitative component.

With that preliminary, let me begin by reviewing some of the technical issues that arose in the case with respect to discriminatory intent. There are a couple of these, but in the interests of time, I'll focus on one. And this is Mr. Foltz's testimony that when he, Mr. Handrick and Mr. Ottman were calculating their composite, they made all kinds of mistakes and therefore the composite wasn't very trustworthy.

As Your Honors probably remember from the hours we spent going through this file, the problem was that a single one of the 17 races that were included in the composite had some faulty data in it. Now, I'm not sure why it matters whether Mr. Foltz, Mr. Handrick and Mr. Ottman were sloppy rather than careful gerrymanderers. If a burglar trips over his feet when he breaks into a home, he still intends to break into the home, and that's what's critical here.

In addition, when plaintiffs examined this supposed error, it turned out to be completely immaterial. Professor Jackman showed that when you remove the one bad race from the composite, the original-flawed-and-then-you-fixed composite are perfectly correlated. Professor Mayer showed the same thing with respect to how the original flawed composite is related to his baseline estimates using new correct

data from the 2012 elections.

Let me turn next to discriminatory effect, and in particular, to the main metric of partisan symmetry the plaintiffs advanced in this case, which is of course the efficiency gap. I don't believe the defendants have disputed that Act 43 is, in fact, one of the most asymmetric plans in modern American history and I don't believe they dispute that this partisan skew by every analysis that we've tried to conduct can be reliably expected to persist for the remainder of the decade.

What they've done instead is to raise a couple -- actually several technical issues, and in the interest of time I'll just focus on volatility and durability which I took to be the main point that Professor Goedert raised in his testimony.

So with respect to durability, the main point that both Mr. Keenan and Professor Goedert have made is that when you consider the possibility of a plan with a certain efficiency gap flipping efficiency gap signs over the course of the decade, that likelihood is reasonably high for certain pro-Democratic plans. Now, I'll note that the probability of a signed flip for Act 43 is more or less 0. And I'd also note that this extremely stringent analysis, as Professor Jackman described it, is only one of about half a dozen separate durability

analyses that he carried out.

To run through a few of them, which I think are powerful indications of the reliability of this metric, the confidence rate associated with an efficiency gap threshold of 7 percent is about 95 percent. So in other words, about 95 percent of plans fall either below this threshold or above it and then never flip signs over their lifetimes.

Even more intuitively, a plan's first efficiency gap is an excellent predictor of its lifetime average efficiency gap. If all we know, if the only information we have is a plan's first efficiency gap, we can account for about three-quarters of the total variation in the lifetime efficiency gap.

And this is a confusing chart. I'll just summarize the takeaway. If we subject the plans in effect today to shifts of up to five points in either party's direction which applies to large efficiency gaps, their efficiency gaps are virtual certain to have the same sign for their lifetimes and to also be large in magnitude.

Now, I would note that this sort of sensitivity testing fully addresses all of the concerns that Professor Goedert raised about not knowing what future electoral environments might look like, not knowing what elections might take place when. We shift to cover the

entire range of plausible electoral environments and we can draw robust conclusions about whether the large efficiency gap we initially observed is going to remain in effect for those kinds of plans for the rest of the decade.

Now, I'd note too this robustness of the sensitivity testing substantially exceeds any that has appeared in the academic literature and in my opinion based on knowing this literature it is the most systematic, extensive sensitivity testing that has yet been conducted in this area. I think its results ought to be extremely reassuring to the Court.

There's more to say on the issue of the efficiency gap, but I think the next topic I'd like to address is that of justification, so the third prong of plaintiffs' proposed test. And here there are really two kinds of arguments the defendants make. One is to try to argue that Wisconsin has a natural pro-Republican political geography, and the other is to criticize various aspects of Professor Mayer's Demonstration Plan. And so I think I'll try to hit those two points before turning the floor to Mr. Hebert.

So let's run through -- I'll focus on the highlights here with respect to political geography. One thing I would note is that every time we got an analysis of

political geography in Wisconsin from defendants and their experts, this analysis disintegrated upon more proper examination. We heard from Mr. Trende that Democratic wards are becoming more Democratic over time; in fact, they're not when this analysis -- they are, but so are Republican wards when this analysis is properly carried out.

We heard from Mr. Trende that as highly partisan wards on the Democratic side -- as wards get more partisan, that they also grow closer together and that has some inference that we're supposed to draw about geographic clustering. It turns out the premise of that analysis is flawed as well. When we use correct data, not PVI's, and when we focus on the mean, which is the single most reliable statistic here, we, in fact, find the exact opposite pattern from the one claimed by Mr. Trende.

The same thing -- actually before I get to this, the same thing happened today when we had counsel and Mr. Trende marching through many, many examples of Wisconsin counties' PVI scores. We only heard about, from defendants, about the PVI's in Dane County and Milwaukee Counties. As soon as we also expanded our field of vision to the collar counties of Milwaukee, we found out that those collar counties are every bit as

Republican as Madison and Milwaukee are Democratic.

Same pattern with Professor Goedert. He conducted an analysis of the distribution of partisanship in the wards currently in effect and concluded this was a pro-Republican skew in the ward distribution. I won't disagree that there was some minor skew in the ward distribution, but that skew completely pales compared to the pro-Republican skew that jumps off the page when you compare the ward distribution to the district distribution.

And let me just note what I think is quite an important point about political geography here that this chart helps to illustrate. So there likely is some natural packing, especially of minority voters in places like Milwaukee. Voting Rights Act districts often have to be drawn in those areas as well. And you can see this region of the chart here. But there's a crucial point about these kinds of districts, which is that these constituencies, in the area of 75 percent Democrat or so, do not move the efficiency gap at all in a pro-Republican direction. And that's because in these districts, yes, Democrats are wasting 25 percent or so of their votes, but that's the exact same proportion of votes that the Republicans are also wasting there. There's no difference in the wasted votes in those packed --

supposedly packed 75 percent or so districts.

The real way you get gerrymandering, the real way you generate an extreme efficiency gap is with these kinds of districts. So when you have the disproportionate cracking of parties' voters, when you have lots more districts where Democrats are receiving 40 to 45 percent of the vote and wasting all of that vote and Republicans are getting 55 to 60 percent of the vote and only wasting a small smidgen of that vote, that disproportionate cracking is the real essence of gerrymandering. And to quote Professor Mayer from yesterday, "That DNA is all over Act 43."

I note also that disproportionate cracking has no conceivable roots in the political geography of Wisconsin. That you have a lot of Democratic or minority voters in central Madison and central Milwaukee says nothing about how you draw the other 90 districts in the plan and to the extent which you have to disproportionately crack one parties' supporters over the others.

Let me turn next to defendants' criticisms of Professor Mayer's Demonstration Plan, which I think also are somewhat misleading. Their main criticism of the partisan performance of the plan seems to be that if you carry out the wrong kind of sensitivity testing, then it

appears that the plan could result in quite a few more or less Republican or Democratic seats being won for reasonable shares -- shifts in the share of the statewide vote. Professor Mayer explained at length this is not the right way to do sensitivity testing. I don't know how to quite remove these -- bottom left.

So I would point out the overlap, the impressive similarity between Professor Mayer's sensitivity testing, to which defendants have objected, and Professor Jackman's sensitivity testing which, as mentioned earlier, is the new gold standard for sensitivity testing in this area. They both generate essentially identical results for Act 43 over an extremely wide range of electoral environments, and that's revealed here.

Now, we also heard criticisms of the Demonstration Plan on the grounds of noncompactness and splitting political subdivisions. This was one of the odd-looking districts that defendants highlighted. Now, this is just a particular cherry-picked district. It's a stipulated fact in this case that the Demonstration Plan is more compact on average than Act 43 and that it splits fewer political subdivisions overall. So we genuinely can't reach any conclusions from this pair of districts or other similar examples. Defendants also raise the issues of incumbent pairings and core retention, and those are

the last ones I'll talk about.

So their analysis proceeded again by highlighting individual districts in the map and noting how many incumbents were paired or for one or two districts out of 99 what percentage of a former district was in the new district. They didn't reveal to the Court the full picture here. What is the full picture? First of all, incumbent pairings and promoting core retention, neither one of those is a Wisconsin legal requirement. With respect to incumbent pairings, when the drafters of Act 43 thought about incumbent pairings, they didn't try to minimize them. What they tried to do instead is to deliberately pair Democratic and Republican incumbents in heavily overwhelmingly Republican districts, and there's nothing like this methodical targeting of one side's incumbents in the Demonstration Plan.

Furthermore, as far as plaintiffs have been able to tell there's not a single document on the hard drives of Mr. Foltz, Mr. Ottman or Mr. Handrick about core retention. This appears to be the classic case of a pretextural justification generated after the fact.

And finally, the broader picture is that the *Baldus* court specifically addressed the topic of core retention, and here is what it said: Only about 300,000 people needed to be moved from one Assembly district to another

in order to equalize the populations numerically, but instead Act 43 moves more than seven times that number, almost 2.5 million people in order to comply with population equality. Same thing at the Senate level. Only 200,000 people had to be moved, but Act 43 instead moved more than a million.

And I'll just close with this final point, Your Honors, which is that all of the analytical tools that plaintiffs have used in this case, they might seem complex, they might seem dense to any observer, but these methods of open-seat baselines, imputations for uncontested races, sensitivity testing, these are the exact same methods that the drafters of Act 43 themselves employed and they're also the exact same methods that drafters around the country employed when they're trying to craft a partisan gerrymander. The difference here is that plaintiffs have been trying to use these tools to detect gerrymandering and to curb gerrymandering, not to perpetuate it. The mission is exactly the opposite, the promotion of democracy, not the undermining of democracy.

I would say to the Court this project of promoting democracy like this lies at the very heart of why we have an independent judiciary in this country. We have a situation here in Wisconsin where democracy really is ailing because of this unprecedented partisan

gerrymandering, and in the face of the legislative passivity and inaction that we're observing, the only way that this problem is going to be solved is through judicial intervention.

And so with that, I'll turn the table over to Mr. Hebert.

JUDGE RIPPLE: Thank you, Professor.

MR. HEBERT: Your Honors, I think I have about 12 minutes left and I will apologize in advance, Lynette, that I may -- I'll try to pace myself.

Plaintiffs' three-part test: Intent, effects, and justification or the lack thereof. That's our Fourteenth Amendment theory.

On the intent issue quickly, during the oral argument on summary judgment in response to a question from Judge Crabb, counsel for the defendants was asked: "Do you contest partisan intent for purposes of summary judgment?" The answer was "No." And he added "And we will not dispute intent at trial either" he didn't envision. So it's essentially been uncontested. And rightfully, so I might add. You have the Ottman memo, Exhibit 241, where he says we have the opportunity and the obligation to determine who's going to be here in ten years. But that goes to intentional durability of a gerrymander.

On the intent issue we have the secrecy policy. We had the rush to nine day legislative process, the very "aggressive legislative agenda," the hiring of the Michael Best law firm and replacing the Democratic counsel and leaving them without funding. You have the incredible testimony of Joe Handrick, who testified in *Baldus* that he didn't even use partisan data. And you heard two witnesses from the state come in and contradict that testimony. I mean that's just unbelievable when somebody testifies under oath that they were in the map room using partisan intent with Professor Gaddie and data to draw a map and then testifies under oath that they did not? And we're going to take action on that after this hearing, Your Honor, with the United States Attorney.

And that's why the *Baldus* court decided that it was laughable when people came in, like the witnesses that came into this court and talked about intent. They deviated from the normal process. This is a typical standard in intent cases. First time in a century that they actually didn't draw the wards first and then do the districts. And you know why they didn't? Because they needed to rush it through because of the recall election and they were afraid they were going to lose power.

They hired Professor Gaddie to run S curves. Why do you run S curves? The only reason you do that is to see

the durability of the partisan gerrymander. And they printed out the S curves. They showed them to the legislative leadership. For heaven's sake, we had the Tale of the Tape which shows they were targeting Democrats. That was Exhibit 283 and 284.

Each plan they drew along the way increased the partisan advantage for Republicans and disadvantaged Democrats. And even their equal population data, when they gave it to the legislators individually, it didn't just contain the number of people in your district or how many you lost, how many you have to pick up, it had the partisan scores on it. So even their equal population, so-called one-person one-vote data was looked at through a partisan lens.

Look at the effects. They're extreme and they're durable. Efficient scores, you've heard those. Worst gerrymander in modern history from 1972 to 2010. Exhibit 35, the original report of Simon Jackman, Figure 1. Exhibit 90, the lifetime average versus the efficiency gap scores. Exhibit 158, worst on the efficiency gap and preservation of county boundaries.

Then even if you look at Exhibit 172, you can compare the number of swing districts in the old plan to the number of swing districts in the new plan and they drop down from 19 to 10. And they increase the number of

strong GOP districts from 27 to 38. I mean I'm going to -- in a minute I'm going to show the Court how you gerrymander. As somebody who has represented state and local governments throughout my entire career as a lawyer and having done hundreds, if not thousands of redistricting plans, I'm going to show you in an illustration right here in the courtroom how they did what they did.

And even Professor Gaddie's detailed definition of durability, as he said, it's virtually certain to bias Republicans throughout the entire cycle.

And the justification. I mean really, the state's trial brief concession at page 26 was that the Demonstration Plan performs just as well as the Act 43 with traditional redistricting principles. Well, if that's the case, then that's a concession that they really can't justify their plan because we have a plan that has less partisan bias than theirs and follows the traditional redistricting criteria. That's on page 26 of their trial brief.

Then they have the series of draft maps that increasingly showed partisanship. Well, if you've got other plans you've drawn along the way that doesn't have that partisan bias and you've been following the so-called redistricting principles, well then for

heaven's sake when you final adopt the worst plan, you've already created four or five demonstration plans that meet the same requirement.

And then you finally have the Professor Chen's hundreds of simulated plans that do the same thing.

The First Amendment injury here -- and the plaintiffs have been in this courtroom every day. Their right to vote is fundamental. It's our voice in the government. It's the only voice many of us have. It's at its pinnacle, the First Amendment, when it involves political speech in voting. The past voting history, when you go to the polls and you record your political vote, you're recording your political value, as Professor Whitford said. It's not right to target people and harm them because of their voting history. Burdening and penalizing people for the fact that what did they do? They had the nerve to participate in the political process and go to the polls, so we're going to use their voting history to minimize and cancel out their vote as a group?

Our test is grounded. The gerrymander test we proposed is grounded in five decades of constitutional law principally arising out of the one-person one-vote cases. We would only capture extreme and enduring gerrymanders. In *Vieth*, one of the cases I worked on,

Vieth v. Jubelier, all nine justices agreed that excessive partisan gerrymanders were unconstitutional. We think they meant it.

We have a record that is complete for this Court. We have a record, as Judge Griesbach noted, that is even going to be complete for eight or nine justices thousands of miles away. We have a case that fits the elusive test we think that the Court has been looking for. Decisions in *LULAC* and *Vieth*, you know what they did to partisan gerrymanderers? *LULAC* in 2006, *Vieth* in 2003, both of my cases. What they did is they gave the green light to partisan gerrymanderers to say this is an opportunity for you. Sky's the limit because we have no standard. And they took advantage of that.

Now, how many legislative leaders came before the court in Wisconsin and justified or defended what they did? As many as are sitting in that witness chair. None. State's theory of this case is that no constitutional limits to partisan gerrymandering really exist because they say there's no test. Well, what that would mean is it's not justiciable and we already know that five justices think it is and I guess we think this is a case where the Court ought to just dish it finally and once and for all.

Partisan gerrymandering cases today masquerade as

racial cases. And why? Because we lack a robust partisan gerrymandering juris prudence and so everybody has to take their challenges and awkwardly fit them into a racial sphere, creating a doctrinal mess frankly in the racial gerrymandering field and perversely encouraging legislators to boast about their partial gerrymandering so that they don't have to get caught up in a racial gerrymander.

Representatives and their parties today are armed with more sophisticated computers and fine-grained voting data than ever before. And what do they use it for? Eliminating political competition, predetermining who's going to win and lose, and wresting unjustified political power from those voters who oppose them and opposing them by packing them and cracking them.

And what does all this have to do with the public? The public's opinion today, they've lost faith. They've lost faith in the integrity of our elections and our elected officials. Public confidence -- this is the Supreme Court just a couple terms ago in *Crawford v. Marion County*. Public confidence in the integrity of the electoral process has independent significance because it encourages citizen participation in the electoral process. And just last term in another one of the cases I was involved in, the Arizona State legislative case,

the Supreme Court reaffirmed the view that "partisan gerrymanders are incompatible with democratic principles." That's got to be a hint. That's got to be a signal that we've got to do something about this, and the court is looking for a case.

Now, I said finally that I would demonstrate what a partisan gerrymander -- how you accomplish that. And I'm going to use water as an example. So when I tell my clients we want to draw districts, we can draw the districts so that the water is down to here so that in a big rainstorm when the water comes up, it won't go over your head. But if we draw it down there where the water is low, are we really creating a safe district for your political party and we're not maximizing the use of our voters because we've got too many of them? So what we really need to do is not draw districts up to here where the water is up to here because in that vote swing we heard about, if it goes up, all of you are going to drown. You're all going to drown in a big swing or even a small swing.

So here's what you do. We're going to draw it to here so that it -- and we're going to measure how high it can go up historically so that it always stays below your chin. That is exactly what Wisconsin did in this case. They drew it right at chest deep.

Now, since the Supreme Court hasn't settled on a standard, the task falls to this three-judge court to develop them, we believe, and the plaintiffs have tried to shoulder this obligation. A decision here that this gerrymander, this partisan intent, this extreme, this unjustified, if you can't find a partisan gerrymander in this case, then it's tantamount to saying it lacks justiciability. We just can't get there. So this case is not at the margins and we ask the Court to declare it unconstitutional.

Finally, I'm reminded of my home state of Virginia, James Madison and Federalist No. 37 who said "the genius of Republican liberty seems to demand not only that all power should be derived from the people, but that those entrusted with it should be kept in dependence on the people." And even Alexander Hamilton, quoted by the Supreme Court in 1969 in *Powell v. McCormick* said "the true principal of a republic is that the people should choose whom they please to govern them." Don't we wish that was the case.

The United States of America continues to be the leading democracy in the world. But if we're going to be able to spread democracy throughout the world, we have the duty to first correct the remaining imperfections of our democracy here at home. As we get ready this weekend

to celebrate Memorial Day, remembering those brave women and men who fought for our country's ideals of freedom, justice, equality, let us honor their memory by holding our government accountable to those worthy and lofty ideals. What the evidence shows is we now know the way, we need only the will.

Thank you, Your Honors, for your courtesies throughout this trial. (4:40 p.m.)

JUDGE RIPPLE: Thank you, Counsel. Mr. Keenan.

MR. KEENAN: I'll try to be brief. The Court unfortunately scheduled the first day of trial on my wife's birthday, obviously unbeknownst to you, so I've got to get home and take care of the kids because she's going to Door County with a friend this weekend. And this case has consumed so much of my life, the sad thing is that all I think of is Door County is in Assembly District 1.

I do want to say that the plaintiffs and Mr. Stephanopoulos and the efficiency gap, they do raise an interesting issue of political science and I think Mr. Trende and Mr. Goedert testified to that. And I follow politics, I was a poly-sci undergrad and I think it's interesting. But at the same time, anyone who has followed politics since the 1990's, has seen that the Republican Party has had a great advantage of winning the

Congress, and if you follow Wisconsin politics, you've seen the Wisconsin party has had a great advantage in winning the State Assembly. It's pretty much every year except in really good wave Democratic scenarios where that has changed. And I think that a standard that's going to adopt the efficient gap and see that as some sort of partisan gerrymandering just isn't in touch with the underlying political gerrymander of this country.

In the opening, I said that we wouldn't see any evidence of gerrymandering as what you think of gerrymandering. For example, the sick chicken or the dragon in flight or Elbridge salamander. We didn't see any evidence of Act 43's districts. That's because they aren't gerrymandered. This is just districting that has a partisan advantage for one side and that's not unconstitutional.

We've seen that Act 43 is comparable with past plans instituted by courts. It's also comparable with Mr. Mayer's Demonstration Plan. The plaintiffs simply haven't met the burden that has been placed on them if you would adopt one of the tests or the thoughts in the concurrences or dissents that we've seen partisan gerrymandering claims. For example, Justice Kennedy in *Vieth* or the dissenting justices in *Vieth* or in *LULAC*, those justices thought you have to show -- the plaintiff

has a burden to show a lack of compliance with traditional districting principles. At most, the plaintiffs have shown that they can draw a comparable plan that has a better result for the party not in control. That just doesn't meet what the dissenters and Justice Kennedy have thought is required of a partisan gerrymandering claim.

Moving to intent, Mr. Hebert is right. We aren't contesting that there was intent, at least as defined by the plaintiffs' minimal requirement in their test. I would say to the extent you're going to evaluate how much intent there was, how much the intent invaded the process, that it isn't any different than what you would expect under any partisan districting process. And I think a lot of the things that the plaintiffs try to attempt to paint as bad frankly are just part of the normal legislative process.

For example, Mr. Ottman, who has much experience in both the minority and the majority of the state Senate, says it's common for major pieces of legislation to first be introduced without the minority party ever having seen it. That has been held out as an example of invasion of partisanship into the districting process. Well, that's just how major legislation works in Wisconsin.

We've heard about how the Republicans drew the

districts before the wards were completed and that this was a radical change from past practice. Well, Mr. Ottman explained how he based that legislation off an idea that was proposed by Chuck Chvala in the last decade who was a Senate Democrat leader. This is actually -- it's a good idea. Why is the state waiting to put its legislative districts in for a full year while every municipality in the state draws their wards, at which point perhaps the state can start drawing districts. In this case it would have been January of 2012 when we're going to have elections in November of 2012? In fact, the Democrats filed their lawsuit in *Baldus* in June of 2011. So in essence what the plaintiffs would have the Republican Legislature do is have a lawsuit pending that's saying the current districts are unconstitutional, asking the court to draw them, but have the Republicans sit around and wait, not draw any districts, and then wait for the municipalities and then draw the districts in 2012. That always worked in the past because courts drew the districts in 2002, in 1992, in 1982. At that point, the Court is going to be drawing the districts in the middle of 2012 because there's going to be a lawsuit. It's really not a good idea though when you're going to district with unified partisan control where a legislative plan is going to be implemented and to force

them to wait a full year to draw the districts.

We've heard about the Republicans hiring a law firm. Well, redistricting is often done with law firms. There are legal concerns involved. There's the Voting Rights Act. Every piece -- every districting plan eventually goes to litigation. I think that's a reasonable anticipation. So it's not all that uncommon that you would expect the Legislature to hire counsel.

The plaintiffs have said -- taken issue with the cutting off of the Democrats' funds to hire counsel. But as a lawyer for the state, it seems to me like I don't see why that's wrong because essentially you'd be funding the litigation against the state. You'd be paying the Democratic lawyers to challenge the plan. That doesn't seem like a good use of taxpayer funds to me.

And then we come to the partisan score. I think the plaintiffs might misunderstand what the point is with the error in the partisan score. The point is that how much can we really trust these numbers to show what reality is going to be? Yogi Berra said predictions are hard, especially about the future. And I think that's true, especially about political races. How do you determine what the race is going to be? How much faith can you really have in this number? Well, it turns out the number they were using was based on erroneous data. I

don't think a court can look at that number now and say well, because all these districts show 55 percent Republican or 52 percent Republican, the Democrats have no chance of winning. Or that it's going to have to have an efficiency gap of a certain amount.

And the plaintiffs say well, Mayer's model correlated well with it. But when you go into Mayer's model, you see that the districts don't seem to add up with the districts. The scores for the districts don't seem to add up with the scores for the districts under the composite. Why is that? I don't know. Professor Gaddie doesn't remember what he did. And frankly these models are only accurate in so far as they're projecting what would happen in a district. If you have these two scores mismatching by 20 points, what good are these scores? And they frankly can't be used as evidence that someone is going to be -- one party is going to be locked out of the political process.

When I started this case, I kind of thought there would be more to these scores than they are and you actually find there's less than meets the eye. And I think the main thing is -- Judge Ripple has asked several times about an intent to control throughout the whole ten-year process. I think it's clear that this score cannot be used to show anything like that. It's a simple

average of races from 2004 to 2010 and it's not even a correct one at that. Whatever use it has, it keeps losing value as you move further and further into the future. At this point, all that data is at least six years old. It's really not, frankly, all that useful right now.

Now, the plaintiffs have said they corrected the error because if you take out the 2006 governor's race, it looks the same. Of course I would ask if you're going to do an average of all the races, why would you exclude one of the most important races. The 2006 Governor's race is one of the two Governor's races that took place during that time frame. It's a very importance data point. If you'd want to measure what the partisanship of a district is, you'd want to see how Governor Doyle ran that year, and he ran very strong. So when you take it out, without that number and with that number showing, you know, 1,000 percent Republican votes, it's inflating the score to make it look more Republican because it's taking out a pretty favorable Democratic result.

And I think another thing on the intent is even if you think this score is determinative or very, very important, we saw in the evidence that the Republicans didn't even enact the most favorable plan to themselves. We saw Tad Ottman had a plan that had lean and safe seats

at 54. The final map says 52. That seems to me to show that partisanship wasn't the only factor that went into this plan. There were many other considerations.

So then we move to the plaintiffs' attempt to use the efficiency gap as a partisan effect or a discriminatory effort. I think the evidence has been pretty unanimous that since the 1990's, there's been a trend, even in the absence of partisanship, of efficiency gaps trending in the Republicans' direction. We've seen this in Professor Goedert's analysis of congressional elections, with the last election on the left side of his line was 1994 where the Republicans actually won control of the Congress for the first time in many years. We saw this in Professor Jackman's analysis of Wisconsin where the last positive efficiency gap was 1994 where Republicans again won control of the Assembly for the first time in many years.

And then we saw Professor Trende -- or not Professor Trende, Mr. Trende. His maps and their numbers explain why this is happening. What we see is that in 1996, President Clinton had a pretty broad-based coalition in Wisconsin and you can understand why there's a 0, plus 2, minus 2 efficiency gap, because the parties are relatively balanced all around the state. We see that the statewide vote share stays constant over that time,

yet the location of those votes changes greatly. We walked through how the Democrats became increasingly concentrated in Milwaukee and Dane Counties, yet their statewide vote share stays the same. The effect of this is that essentially they're getting the same number of statewide votes, but it's less able to translate into the legislative seats because you're getting the votes in places you're already winning and you're losing the votes in places where you were winning and you're no longer winning, like the example we saw from Marathon County.

And I think that's why we see the substantial negative efficiency gaps under the prior court plan. Since 1998, every EG in Wisconsin has been negative, and they have been pretty substantially negative. And yet now when we have a legislatively enacted plan, the test is supposed to be a certain level of EG, which we have seen three times under a court plan. And that level, the negative 7, is set based on an expectation of what kind of level would we need to see to have an election that flips positive at some point in this plan. That's how Jackman, Professor Jackman, calculated his threshold. That threshold just doesn't seem to make any sense in Wisconsin. If we've had two straight court plans where you had seven elections, that neither one of them was positive. And in fact, they're so negative that the

confidence intervals didn't even go to the positive.

So why now, when the Republicans win and are able to district, they're expected to enact a plan that would be, one, less than the EG's seen under court plans, and two, at a level where there would expect to be a positive efficiency gap. It's just not connecting with gerrymandering. It's trying to take a lot of things that are coming into play here and turning it into this discriminatory effect. So that might be appropriate in a race discrimination case where race discrimination just is wrong in and of itself. It isn't appropriate here where its partisan intent, something that is accepted, lawful and not even -- it's not even wrong and it's just understood that it will happen.

And the reason it's not wrong is that districting is given to the Democratic branches. We've heard a lot of talk about democracy. Well, what is democracy? It's having elections. Who won the elections? In 2010, the Republican Party won these elections. That gave them the right to district. There's Democratic legitimacy in these actions. And then you would think well, if this was so undemocratic, wouldn't you have seen a response? Well, we haven't seen that response.

Governor Walker was recalled and survived handily. Governor Walker won re-election in 2014. The Republicans

won a majority of the statewide Assembly vote in 2014. The only year where the Republicans haven't won the majority is 2012 where there was a narrow Democratic majority. There just isn't an antidemocratic, small "d", aspect here. This is actually -- democracy is that the people vote for their representatives. The Republicans won the 2010 elections under a plan drawn by a court. The Constitution gives them the right to district.

There has to be a strong burden for a court to come in and disrupt that process. The plaintiffs simply haven't offered a standard by which that should occur.

Going to the burden-shifting prong, the plaintiffs seem to interpret their test to say that as long as they can draw one plan that has less bias, they've met this prong. I think this is inconsistent with the way the Court has framed the burden shifting in the summary judgment decision where there has to be more than just one hypothetical alternative plan.

But I think going through the Demonstration Plan was instructive. It showed that Professor Mayer didn't consider a lot of things that a court would have to consider when districting, that the Legislature did consider when districting. For example: Core retention; incumbents; disenfranchisement. When you aren't constrained by those factors, you can draw a lot of

different maps. The Republican Legislature was restrained by those factors. You're not comparing apples to apples, you're comparing apples to oranges.

And I think what we saw from those examples that we went through was that given Wisconsin's geography, you have to affirmatively set out to narrow the efficiency gap in order to do it. You have to try to draw those districts like Fond du Lac through Oshkosh. The reason we see the efficiency gap is the federal courts aren't trying to do that, they're just taking Fond du Lac and taking the surrounding area. We got the hallmark of gerrymandering, a 58 Republican district. You have to try to avoid that. That's fine as an academic exercise. I don't think it's something that we should require a legislative body to do. They should be able to be free to apply traditional districting principles the way they see fit and not district -- not be forced to district in a way just looking at one number, the efficiency gap.

I was thinking as Professor Goedert said, frankly I don't even know how you would issue a remedy in this case. What are you going to direct the Legislature to do? Draw a plan that's going to have an efficiency gap of a certain amount? How would they know what it's going to have? They could try to draw a plan that had that and it wouldn't. They could try to draw a plan that had a

certain efficiency gap and be on the other side. We don't really know. It's an after-the-fact test that just says what happened happened in this election.

So to wrap up, in *Vieth* the late Justice Scalia's plurality opinion said that these standards would set courts out on a sea of imponderables and nothing in this case has convinced me that he was wrong. We've seen how many elements go into these things. We've seen there's a lot of uncertainty. We've seen just the difficulty of dealing with this and they're -- just frankly, the efficiency gap does not provide a way to manage these things. And perhaps Mr. Hebert I think said that justice has greatest justiciable. I think this trial will show that perhaps that it truly isn't justiciable. There just is no way to determine partisan gerrymanders.

Thank you. (4:59 p.m.)

JUDGE RIPPLE: Thank you, sir. I think we are -- have completed the proceedings. On behalf of the court, I'd like to thank all of the lawyers for a really wonderful job they did. Thank you very much for all of your cooperation. It was really a wonderful experience to work with all of you. I very much appreciate it. I'm looking forward to the remainder of the briefing and we'll certainty give this thing our full attention.

So we'll rise and we'll conclude the proceedings.

(Proceedings concluded at 5:00 p.m.)

* * * * *

I, LYNETTE SWENSON, Certified Realtime and Merit Reporter in and for the State of Wisconsin, certify that the foregoing is a true and accurate record of the proceedings held on the 27th day of June 2016 before the Honorables Circuit Judge Kenneth Ripple, District Judge Barbara B. Crabb, and District Judge William Griesbach, in my presence and reduced to writing in accordance with my stenographic notes made at said time and place.

Dated this 9th day of June 2016.

/s/_____

Lynette Swenson, RMR, CRR, CRC
Federal Court Reporter