

1 IN THE UNITED STATES DISTRICT COURT
2 FOR THE NORTHERN DISTRICT OF ALABAMA
3 SOUTHERN DIVISION

4 BOBBY SINGLETON, et al., *
5 Plaintiffs, * 2:21-cv-1291-AMM
6 vs. * January 6, 2022
7 * Birmingham, Alabama
8 * 9:00 a.m.

9 JOHN MERRILL, in his official *
10 capacity as Alabama Secretary *
11 of State, et al., *
12 Defendants. *

13 *****

14 EVAN MILLIGAN, et al., *
15 Plaintiffs, * 2:21-cv-1530-AMM

16 vs. *

17 JOHN MERRILL, in his official *
18 capacity as Alabama Secretary *
19 of State, et al., *
20 Defendants. *

21 *****

22 MARCUS CASTER, et al., *
23 Plaintiffs, * 2:21-cv-1536-AMM

24 vs. *

25 JOHN MERRILL, in his official *
capacity as Alabama Secretary *
of State, et al., *
Defendants. *

TRANSCRIPT OF PRELIMINARY INJUNCTION HEARING
VIA ZOOM CONFERENCE
VOLUME III
BEFORE THE HONORABLE ANNA M. MANASCO,
THE HONORABLE TERRY F. MOORER,
THE HONORABLE STANLEY MARCUS

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P R O C E E D I N G S

(In open court.)

JUDGE MARCUS: Good morning. Do we have counsel for Milligan?

08:59:59 MR. NAIFEH: Good morning, Your Honor. This is Stuart Naifeh for the Milligan.

JUDGE MARCUS: Good morning to you. And for Singleton?

MR. BLACKSHER: For Singleton, Your Honor, Jim Blacksher is here. I am sure there are others, too.

JUDGE MARCUS: Good morning to you. And for Caster?

MS. KHANNA: Good morning, Your Honor, Abha Khanna for the Caster plaintiffs.

JUDGE MARCUS: Good morning. And for the Secretary of State?

MR. LACOUR: Good morning, Your Honor. Edmund LaCour for the Secretary of State.

JUDGE MARCUS: And for -- I see we have Mr. Davis. Good morning to you.

09:00:26 MR. DAVIS: Good morning, Your Honor. Mr. Walker is in the building, and he is logging on as we speak. But he is here and ready to proceed.

JUDGE MARCUS: So we are ready to proceed as far as both you and Mr. Walker are concerned?

09:00:40 MR. DAVIS: Yes, Your Honor.

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1 JUDGE MARCUS: Okay. Thanks very much. When we broke
2 late yesterday in the evening, you were going to reconnoiter
3 amongst yourself and tell us the order in which you chose to
4 proceed on behalf of the plaintiffs. Have you reached a
09:01:01 5 conclusion, and can you share with us the order of the day
6 today?

7 MR. NAIFEH: Good morning, Your Honor. The order that
8 we have agreed upon is that the plaintiffs, the Caster and the
9 Milligan plaintiffs will call their *Gingles* witnesses, the
09:01:21 10 *Gingles I, II, and III*, and then the defendants will call
11 Mr. Bryan. And then we will proceed with our Senate factors
12 experts when Mr. Bryan concludes his testimony.

13 JUDGE MARCUS: On *Gingles I, II, and III*, how many
14 experts and witnesses do you have, Mr. Naifeh?

09:01:40 15 MR. NAIFEH: We have the Milligan plaintiffs,
16 *Gingles I* expert, Dr. Duchin, and then there are -- Caster and
17 Milligan each have a *Gingles II and III* expert. So three
18 experts total.

19 JUDGE MARCUS: Three experts. And do you think we
09:01:53 20 will get to Mr. Bryan today, or does that look like a pipe
21 dream?

22 MR. NAIFEH: From the plaintiffs' perspective, we
23 think it's possible we could get to Mr. Bryan toward the end of
24 the day.

09:02:08 25 JUDGE MARCUS: I just wanted to make sure, though,

1 that Mr. Davis and Mr. Walker have a chance to have a full day
2 to get Bryan on. I only say that if you spill over into
3 tomorrow with *Gingles I, II, and III*, I want to make sure that
4 we have a chance for Bryan to be heard. That won't be a
09:02:29 5 problem for you, Mr. Naifeh?

6 MR. NAIFEH: I don't believe so, Your Honor. We
7 expect that we will get through all of the *Gingles* experts
8 today. And Mr. Bryan, if we don't get to him today, he would
9 still have all day tomorrow.

09:02:43 10 JUDGE MARCUS: So I take it, Mr. Davis, Bryan is set
11 up for either late today or all day tomorrow starting in the
12 morning?

13 MR. DAVIS: Yes, Your Honor. Whether we begin today
14 and finish tomorrow or whether we begin tomorrow, we will be
09:02:57 15 ready to go.

16 JUDGE MARCUS: Thanks very much, and you may proceed,
17 counsel, with your next *Gingles* witness.

18 MR. NAIFEH: The Milligan plaintiffs would like to
19 call Dr. Moon Duchin.

09:03:06 20 MOON DUCHIN,
21 having been first duly sworn, was examined and testified as
22 follows:

23 JUDGE MARCUS: Would you be kind enough to state your
24 name for the record.

09:03:23 25 THE WITNESS: Sure. My name is Moon Duchin, and I am

1 a professor of mathematics and a senior fellow in the College
2 of Civic Life at Tufts University.

3 JUDGE MARCUS: Welcome to you. Thank you very much.
4 And, counsel, you may proceed.

09:03:36 5 DIRECT EXAMINATION

6 BY MR. NAIFEH:

7 Q Good morning, Dr. Duchin. Can you tell us your
8 educational background?

9 A Sure. I have undergraduate degrees in mathematics and
09:03:49 10 women's studies from Harvard University. And then a master's
11 and Ph.D. in mathematics from the University of Chicago.

12 Q We touched on this already, but what is your current
13 professional position or positions?

14 A I did, yes. I am a professor at Tufts University and hold
09:04:10 15 several affiliated positions there, but in particular as I just
16 mentioned, I am a senior fellow in the Civics College at Tufts.

17 Q Do you have any other affiliations at Tufts University?

18 A I do. I've been directing the program in science
19 technology and society, and I hold a collaborating faculty
09:04:30 20 position in the Department of Race, Colonialism, and Diaspora
21 Studies.

22 Q And are you affiliated with an entity called the MGGG lab?

23 A That's right. I'm the principal investigator of a lab
24 that's part of the College of Civics. It's called the MGGG
09:04:50 25 redistricting lab and it's an interdisciplinary lab whose staff

1 has been up to 20 people.

2 Q What does MGGG stand for?

3 A That stands for Metric Geometry and Gerrymandering Group.

4 And what that reflects is that I use my mathematical specialty,

09:05:08 5 which is called metric geometry, to try to understand

6 redistricting.

7 Q And you are a full professor at Tufts University?

8 A I am.

9 Q And how long have you been a professor at Tufts?

09:05:20 10 A I've been on the faculty since 2011.

11 Q How long have you been a full professor?

12 A Full professor, about a year

13 Q As a math professor and principal investigator at the MGGG
14 lab, what does your research focus on?

09:05:41 15 A I have a few research specialties in pure mathematics, but
16 particularly as part of the lab, we look at geometry and
17 computation and how these help you understand redistricting.

18 Q So have you done research on issues related to
19 redistricting and can you describe some of that?

09:06:11 20 A I have --

21 Q I will try to speak more --

22 A Actually, can everyone hear me okay?

23 JUDGE MARCUS: We can hear you fine. Again, if
24 everyone will take their time and speak up loudly and slowly so
09:06:22 25 our court reporter can get everything down. She transcribes

1 everything as we go forward, but it's a little bit more
2 difficult since we're proceeding wholly remotely.

3 So, counsel, take your time. Dr. Duchin, take your time.

4 THE WITNESS: You bet.

09:06:43 5 BY MR. NAIFEH:

6 Q Do you need me to repeat the question?

7 A Oh, please do.

8 Q Okay. Can you describe some of your research on issues
9 related to redistricting?

09:06:56 10 A Yes. I'd be happy to.

11 I have at this point over a dozen peer-reviewed research
12 papers focused on issues of redistricting. Those appear in
13 venues like foundations of data science, the election law
14 journal, statistics in public policy, political analysis, and
09:07:20 15 so on.

16 In addition, I've done work supporting line drawing bodies
17 in states around the country.

18 Q And are you familiar with the scholarly literature on
19 census, racial and ethnic categories?

09:07:37 20 A I am. I have researched and taught courses covering the
21 history of the census, focused on the U.S. Census Bureau.

22 Q Okay. And can you describe your background working with
23 demographic data?

24 A Sure. I -- the heart of all of the data work that I do
09:08:03 25 uses the data set that comes from the U.S. census, namely --

1 especially the decennial census data and the -- what we call
2 PL 94-171. And also a number of other useful data products
3 from the bureau.

09:08:26 4 I recently was the principal investigator of a grant from
5 the national science foundation, a million dollar grant to
6 study what I called network science of census data. One of the
7 leading experts in the nation on the disclosure avoidance
8 systems that are used in the census, particularly what is
9 called differential privacy, which was instituted this year.
09:08:49 10 Or in this census, I should say.

11 Q Given your background, what expertise did you bring to
12 bear in formulating the opinions in this case?

13 A Knowledge of census data, knowledge of redistricting, and
14 of balancing the principles involved in redistricting,
09:09:09 15 particularly metrics such as compactness.

16 Q Other than for this case, have you prepared redistricting
17 plans?

18 A I have.

19 Q Can you describe your experience preparing redistricting
09:09:23 20 plans?

21 A Yes. I've prepared plans widely for demonstrative
22 purposes. For example, my lab has partnered with a non-profit
23 organization called More Equitable Democracy to examine various
24 redistricting situations around the country, and to consider
09:09:46 25 the question of whether districts or alternative systems such

1 as rank choice might perform better.

2 In the context of those studies, I looked at places from
3 the Chicago City Council to Terrebonne Parish, Louisiana; Jones
4 County, North Carolina; King County, Washington; localities
09:10:11 5 really around the country where demonstrative plans were part
6 of the work.

7 In addition, I was the redistricting expert consultant for
8 the Massachusetts State Senate in this cycle, where I helped,
9 in particular, to draw the voting rights district in that body.
09:10:32 10 I consulted for the people's maps commission in Wisconsin in
11 this cycle, where I drew demonstrative plans for Congress,
12 State Senate, and State House.

13 Those are a few examples of work around the country.

14 Q Thank you. And have you previously testified as an expert
09:10:53 15 witness in federal court?

16 A Not in a federal court.

17 Q In state court?

18 A I did earlier this week in North Carolina.

19 Q Okay. And in that case did the Court allow you to testify
09:11:07 20 as an expert witness?

21 A They did.

22 Q Okay.

23 MR. NAIFEH: Your Honor, I would like -- Your Honors,
24 I would like to tender Dr. Duchin as an expert witness in
09:11:17 25 redistricting, applied mathematics, quantitative redistricting

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1 analysis and demography and use of census data.

2 JUDGE MARCUS: Why don't you go a little bit more
3 slowly so our court reporter can take it down. You started out
4 with an expertise in redistricting. What do you have after
09:11:33 5 that?

6 MR. NAIFEH: Applied mathematics, quantitative
7 redistricting analysis, and demography and use of census data.

8 JUDGE MARCUS: Is there any challenge to Dr. Duchin's
9 qualifications in those six or seven areas that have been
09:11:53 10 outlined?

11 MR. LACOUR: None from the defendants, Your Honor.

12 JUDGE MARCUS: All right. Seeing no objection, we
13 will qualify Dr. Duchin as an expert in each of the areas,
14 Mr. Naifeh, that you have identified.

09:12:09 15 MR. NAIFEH: Thank you, Your Honor.

16 BY MR. NAIFEH:

17 Q Dr. Duchin --

18 JUDGE MARCUS: You may proceed with your examination
19 of your expert witness.

09:12:17 20 MR. NAIFEH: Thank you, Your Honor.

21 BY MR. NAIFEH:

22 Q Dr. Duchin, did you prepare any reports in this case?

23 A I did. I believe three submissions in all.

24 Q And do you have copies of those reports in front of you
09:12:30 25 today?

1 A I do, on the computer.

2 Q And what were the questions you were asked to opine on in
3 this case?

4 A The principle question that I was asked to study was the
09:12:46 5 question of whether it is possible to draw two majority-black
6 districts out of the seven congressional districts in Alabama
7 while maintaining the traditional redistricting principles to a
8 very high degree.

9 Once I determined that it was possible to draw two
09:13:08 10 majority-black districts, I was asked to produce plans that
11 demonstrate that possibility and my report contains four such
12 plans.

13 Q And what tests did you apply to determine whether it is
14 possible to create two majority-black districts in Alabama's
09:13:26 15 congressional plan?

16 A The best proof of possibility is proof by example. And so
17 being able to furnish four plans demonstrates that it is
18 possible to do so.

19 Q And can you summarize what conclusion you reached with
09:13:45 20 regard to whether it is possible to draw a congressional plan
21 that includes two majority-black districts in Alabama?

22 A I concluded that it is possible.

23 Q In preparing your reports did you have occasion to
24 consider the congressional redistricting plan adopted by the
09:14:12 25 state of Alabama last fall?

1 A I did do so.

2 Q Okay. And is it okay if I refer to that plan as HB-1?

3 A Yes.

4 Q Do you understand what I am referring to?

09:14:24 5 A I do. I believe I call it that in my reports.

6 Q And I'd like to turn to demographics of Alabama. But
7 before we talk specifically about Alabama, can you please tell
8 us about how race is categorized in census data?

9 A Yes. Today on the U.S. census, on the short form that's
09:14:49 10 used in the decennial census, respondents are faced with six
11 choices -- well, respondents are faced with choices that the
12 census categorizes into six racial groups or categories.
13 Particularly the respondents are faced with certain yes-no
14 questions. There's a check box answer to the question "are you
09:15:16 15 white". There's a check box answer to the question "are you
16 black or African-American," and so on.

17 Because there are six categories, those can be responded
18 to in any of a large number of ways, particularly it would be
19 two to the sixth or 64 different combinations, except that the
09:15:39 20 a respondent cannot elect none of the racial categories. So
21 that makes 63 different ways that the census categorizes the
22 racial responses.

23 There's a separate ethnicity question, which is another
24 yes-no question effectively, asking respondents if they are
09:15:58 25 Hispanic or not.

1 So for racial and ethnic combinations that doubles the
2 number of possibilities to 126. Quite a lot of ways to
3 identify.

4 Q And just to be clear, when you say there are these check
09:16:16 5 boxes, someone completing the census form can check more than
6 one box. Is that your testimony?

7 A That's right. This was a change adopted by the Office of
8 Management and Budget in the 1990s, where it became possible
9 for the first time in recent history to elect multi-racial
09:16:37 10 identities explicitly.

11 Q And so the census does the census allow people to identify
12 themselves as both black and another race?

13 A It does. You could choose black and white; black, white
14 and Asian, and so on.

09:16:55 15 Q And does the census allow people to identify themselves as
16 both black and Hispanic?

17 A It does.

18 Q And also black and non-Hispanic?

19 A That's correct.

09:17:05 20 Q And does the census categorize those who have selected
21 black and another race or ethnicity?

22 A Could you ask that again, please?

23 Q Sure. Is there a category that includes people who have
24 identified themselves as black in addition to another race or
09:17:31 25 ethnicity?

1 A Well, the way that I've constructed black in my reports,
2 which some call any part black and which I believe Mr. Bryan
3 calls all black, it is to take everyone who answered yes to the
4 yes-no question "are you black". And so that's the most
09:18:01 5 expansive possible construction of black.

6 It takes, again, everyone who answered yes to the
7 question. That means that it includes people who identify as
8 black in combination with other races. That means that it
9 includes people who identify as Hispanic or not. As long as
09:18:23 10 they answered yes to the question "are you black".

11 Q And what is -- is there a more narrow definition of black
12 that is sometimes referred to when referring to census data?

13 A There are. There are several more restrictive
14 constructions. The most restrictive would be what is sometimes
09:18:45 15 called black alone, or non-Hispanic black alone. And that
16 would be those who select black, no other race, and the
17 non-Hispanic ethnicity. So that would, of course, be the
18 narrowest possible construction. Some call that single-race
19 black also.

09:19:02 20 I would note that there are other possibilities in between
21 those two extremes, between the most restrictive and the most
22 expansive. For instance, the Department of Justice issued
23 guidance with a fairly complicated definition that includes
24 single race for non-Hispanic respondents, includes single-race
09:19:24 25 black, black and white, and then a fraction of all the

1 multi-racial black identities. So I would call that a more
2 complicated construction that's intermediate between the
3 narrowest and broadest.

09:19:44 4 Q And you testified in this case you relied on the any part
5 black or the broadest definition of black; is that right?

6 A I did, as my principle construction.

7 Q Okay. And why did you use that category in this case?

8 A I believe there are multiple reasons to do so, but the
9 simplest is the one that I have already emphasized, which is
09:20:01 10 that respondents were asked are you black. And I included all
11 those who answered yes.

12 There are other reasons, particularly looking at the
13 history of the census that I believe that to be a justified
14 practice. And I could give an example, if that's of interest.

09:20:22 15 Q Please do.

16 A Sure. So, for instance, earlier in the Twentieth Century,
17 in the 1930s, there had been several multi-racial black
18 categories on the census, particularly Mulatto, Quadroon, and
19 Octoroon. These were all census categories up through the 1920
09:20:49 20 census. They were eliminated in the 1920s and only black then
21 appeared on the 1930 short form.

22 But the instructions that the bureau issued to its
23 enumerators explicitly told the enumerators to take everyone
24 who previously would have belonged to a multi-racial black and
09:21:11 25 white category and to enumerate them as Negro without

1 distinction. Those are the instructions to enumerators from
2 1930. The instructions went on to say that individuals who
3 were multi-racial should be identified according to the
4 non-white parent.

09:21:31 5 So this is an example. There's a lot to say about the
6 history of the census. This is an explicit example that made
7 clear that those earlier multi-racial identities that were
8 meant to be understood as under the umbrella of black
9 population.

09:22:00 10 Q Dr. Duchin, did you examine Alabama's demographics for
11 this case?

12 A Yes, I did.

13 Q And as of the 2020 census, what parts of Alabama have the
14 highest concentrations of black residents?

09:22:13 15 A Of course you can find black residents all over the state.
16 But in particular, there are two kinds of locus of black
17 population that are notable. One is urban and one is rural.

18 First, in terms of urban population, the largest cities in
19 Alabama have very long-standing and significant black
09:22:40 20 population. In particular, of the five most populous cities in
21 Alabama, four are majority black by population with Mobile
22 slipping just under a majority when you turn to voting age
23 population. So urban concentrations of black voters are an
24 important locus of population in the state.

09:23:05 25 On the other hand, of course, Alabama has a significant

1 rural black population, particularly notable is the Black Belt,
2 which traditionally consists of 18 core counties that span
3 across the state, with sometimes a few more counties, maybe
4 five, added secondarily more towards the west.

09:23:30 5 So those counties -- I know you have been hearing about
6 the Black Belt already in this trial. But the -- are
7 characterized by many counties with small population that are
8 rural that are historically agricultural. And then I
9 understand to have a shared economic interest.

09:23:51 10 So that's a second important locus of black population, is
11 that rural population and particularly the Black Belt.

12 Q And in the HB-1 plan, which district has the highest
13 concentration of black voters?

14 A That would be District 7 by far.

09:24:12 15 Q What is the any part Black Voting Age Population in
16 District 7?

17 A Okay. Here we could pull up my report, if you'd like. I
18 also have it in front of me. And so --

19 Q Can you just tell the Court?

09:24:30 20 A Certainly. HB-1 has just over 55 percent BVAP, again, by
21 my construction in District 7.

22 Q And how does that compare with other districts in HB-1?

23 A There's a fairly steep drop-off to the next district,
24 District 2, with about 30 percent BVAP.

09:24:54 25 Q And then beyond District 2?

1 A Then we see District 1 and 3 near 25 percent, 25,
2 26 percent.

3 MR. NAIFEH: And, Mr. Ang, can you pull up Figure 1 on
4 page 3 of Dr. Duchin's report? That's Exhibit M-3,
09:25:16 5 Document 88-3.

6 BY MR. NAIFEH:

7 Q Dr. Duchin, do you recognize this diagram?

8 A I do.

9 Q And what does it show?

09:25:29 10 A So on the left, we see this plan that we're calling HB-1,
11 which is the newly enacted congressional plan. And the colors
12 show you the different districts. And I've kept county lines
13 so that we can be aware of how those fall.

14 On the right, we see the outlines of the same districts,
09:25:53 15 but now overlaid with what's called a choropleth. It's just a
16 shaded representation of where black population is in the
17 state. So this is BVAP shown in these orange tones on the
18 right-hand side.

19 Q And you just used the term BVAP. Can you explain to the
09:26:15 20 Court what that means?

21 A Yes. Sorry. BVAP stands for the Black Voting Age
22 Population that I've been describing.

23 Q And in this case that means that any part Black Voting Age
24 Population?

09:26:29 25 A That's correct. That's the default construction

1 throughout my reports, although I do note other possibilities.

2 Q And how does HB-1 divide the state's black population into
3 the seven congressional districts?

4 A Well, what I see when I look at particularly this figure
09:26:50 5 on the right is hallmarks of what is often called packing and
6 cracking. So we can see that in District 7. Now, that's that
7 light blue district, and then you can find the corresponding
8 district on the right. You see that really the great majority
9 of the precincts that are included in the district are heavily
09:27:16 10 black by population share -- by voting age population share.

11 And this creates a district with an elevated BVAP overall.

12 On the other hand, when you look around that to the south
13 and east in districts 1, 2, and 3, you see what is sometimes
14 called cracking. In particular, when you look at those
09:27:41 15 dividing boundaries between those districts, you can see that
16 they go right through some of these loci of black population,
17 thereby splitting up a population that could have been numerous
18 and geographically compact enough to form a district.

19 Q About what portion of Alabama's black population resides
09:28:06 20 in Congressional District 7?

21 A In Congressional District 7, I think that would be
22 about -- about a third of Alabama's black population.

23 MR. NAIFEH: Thank you, Mr. Ang. We can take that
24 exhibit down.

25

1 BY MR. NAIFEH:

2 Q Going back to the questions you were asked to consider,
3 were you able to develop any illustrative plans demonstrating
4 whether it's possible to create two majority-black districts in
09:28:39 5 Alabama?

6 A Yes. My report includes plans that I called plan A, B, C,
7 and D.

8 Q And did you use any software to develop the illustrative
9 plans?

09:28:52 10 A I did. I used software in a few ways. As a first step,
11 as an exploratory step, I used algorithms developed in my lab
12 to create -- to generate large numbers of different
13 possibilities that would show me if it was possible to find two
14 majority-black districts. And I found that it was possible.
09:29:22 15 My randomized algorithms found plans with two majority-black
16 districts in literally thousands of different ways.

17 Convinced that that was possible, I then turned to drawing
18 by hand. And I would emphasize that the role of the maps found
19 by the exploratory algorithms was just then inspiration.

09:29:46 20 Seeing that it was possible and with some of the ideas about
21 how it was possible, I then started with a blank slate and drew
22 by hand.

23 I will say a little bit more about that. The hand drawing
24 was done first with the second software package developed in my
09:30:06 25 lab. And here, let me mention that all these software packages

1 are public, open source, available for inspection by the public
2 and by counsel at any time.

3 So the second package is called Districtr. And in it
4 members of the public can draw their own plans. And we use
09:30:27 5 Districtr -- I use Districtr to draw plans at the level of VTDs
6 or precincts. We haven't talked about those yet. But those
7 are the units of census geography that look a lot like the
8 precincts that people vote in.

9 So the second stage was to draw at the VTD level. And
09:30:47 10 then finally, to balance population, I used finer tools, and in
11 particular, we have a number of Python packages that we use to
12 see the demographics down to the block level, and to understand
13 the properties of plans.

14 Q And you mentioned Python. That is the -- is that a
09:31:11 15 programming language?

16 A Python is a common open source programming language. And
17 it permits many packages, such as what are called Pandas for
18 working with large data frames and GeoPandas for working with
19 Geo-spatial data. I would say that Python is the language of
09:31:33 20 choice in data science.

21 Q Is Python frequently used in redistricting?

22 A I would say that it is.

23 Q You mentioned that when you hand drew plans, you started
24 from a blank slate. So just to clarify, does that mean --
09:31:53 25 did you -- did you start from an existing plan?

1 A No. Only used some of the concepts I had seen in plans
2 that were found by the exploratory algorithms, but literally
3 started with an empty map of the state when drawing.

4 Q Okay. And what kind of data did you use to develop the
09:32:18 5 illustrative plans?

6 A Again, here, as in my research, by far the largest data
7 set is the one from the U.S. Census Bureau, called the
8 PL 94-171. That is block level demographic data that the
9 bureau was directed to compile specifically for redistricting
09:32:40 10 purposes. That is the express function of this data set.

11 In addition, there are number of other highly useful
12 Census Bureau products, such as their TIGER/Line Shapefiles
13 that give you the geographical units. Their American Community
14 Survey, which is an annual survey from which we extract
09:33:03 15 information about Citizen Voting Age Population and so on.

16 Q Okay. Are these the same types of data that you would
17 normally use to create a redistricting plan?

18 A Definitely.

19 Q And you mentioned census geography such as census blocks.
09:33:26 20 What are census blocks?

21 A Okay. So the census maintains a geographical hierarchy of
22 units, which has a central spine with six levels. It starts at
23 the nation, as you would expect, subdivides into states, from
24 states to counties, within counties the next unit is called
09:33:51 25 census tracts. Those divide into block groups which divide

1 into blocks.

2 So blocks are the smallest units of census geography.

3 They're sometimes called the pixels of redistricting. They're

4 the littlest units that you can use as building blocks. There

09:34:10 5 are a great number of them. In the 2010 census there were over

6 11 million census blocks in the nation. They range in

7 population from 0. They're a substantial number of census

8 blocks 0 population to typically a few hundred people, although

9 sometimes you will find census blocks with much larger

09:34:32 10 population, such as if there are group quarters like prisons or

11 dormitories. So that is a brief description, I hope, of census

12 blocks.

13 Q And you also mentioned VTDs. Can you tell us what a VTD

14 is, what VTD stands for and what a VTD is?

09:34:52 15 A Sure. There's a redistricting data program, an office

16 within the Census Bureau, and they undertake every 10 years to

17 communicate with the states and collect information on the

18 boundaries of precincts, which are, as we all probably know,

19 units of election administration that are maintained typically

09:35:17 20 at a local level.

21 And so the bureau collects this information and compiles

22 them into a product called VTDs. They say that stands for

23 voting district, but most people call them voting tabulation

24 districts, VTDs. And so you should think of those as the

09:35:36 25 Census Bureau's version of local election administration units.

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1 That makes them particularly useful for redistricting because
2 since they're in the census hierarchy, we can accurately
3 measure demographics, but they're also well-coordinated with
4 local elections, local election administration.

09:36:00 5 Q And did you use beyond the information from the Census
6 Bureau, did you use any other information or consult any other
7 information when preparing the illustrative plans in this case?

8 A I did. And some other sources are listed in my report.
9 But in particular, I consulted the enacted plans from the
09:36:22 10 state, which I obtained from the state's web sites. I looked
11 in particular at the congressional plan, of course. But also,
12 for example, at the school board of education plan prepared by
13 the state, enacted.

14 Q And did you consult the state's redistricting guidelines?

09:36:42 15 A I did. I did consult the state's redistricting
16 guidelines.

17 Q You mentioned the State Board of Education plan. What
18 did -- why did you obtain information from the State Board of
19 Education plan?

09:36:54 20 A The board of education plan was of particular interest to
21 me because it's an eight-district plan. We've already heard
22 that the congressional district plan has seven districts. But
23 the board of education plan has two that are majority-black.
24 So I was particularly interested to see how the state would con
09:37:17 25 instruct a second majority-black district.

1 Q And were there other features in the State Board of
2 Education plan that were relevant in drawing the illustrative
3 plans in this case?

4 A One of the things that you'll notice across my plans is
09:37:38 5 the -- having to do with Mobile County and with the city of
6 Mobile. And I was interested to see how that would be handled
7 in a second majority-black district. And so I looked to the
8 board of education for an example.

9 Q Is it your regular practice to look at the redistricting
09:37:58 10 plans for other governmental bodies in determining how to draw
11 an illustrative plan for a different set of districts?

12 A Yes. Definitely. I would call that a standard practice
13 of mine.

14 Q Okay. And you mentioned the Census Bureau's American
09:38:20 15 Community Survey or ACS. What did you use ACS data for?

16 A In this case, I only used ACS data to estimate what's
17 called BCVAP or Black Citizens Voting Age Population as
18 described in my report. I suppose I should clarify. Not only
19 Black Voting Age Population, but the Citizens Voting Age
09:38:46 20 Population of various groups.

21 Q Okay. How did you use the data and the information that
22 you mentioned to create the illustrative plans?

23 A Well, as we discussed, my main question was whether I
24 could make plans that had two majority-black districts while
09:39:10 25 showing great respect for the other additional districting

1 principles. And so the main way that all this data was used
2 was, in fact, many of the redistricting principles touch on
3 census and demographic data. But in particular, I needed to
4 make sure that the districts I was creating would be over
09:39:34 5 50 percent black.

6 Q Okay. And just sort of mechanically, how do you create a
7 redistricting plan using census data?

8 A Well, as I described, when drawing, I started out with the
9 Districtr program, which lets you select a paint brush like
09:39:57 10 tool and start to color in the VTDs of the state. You can also
11 turn on a feature that captures whole counties. And because
12 county preservation is important, as I'm sure we'll discuss, I
13 tried to take whole counties into a district whenever possible.

14 So typically the way you complete a plan is by first
09:40:23 15 drawing with the largest units counties in this case, getting
16 to a place of very coarsely balanced population, and then going
17 to the next smaller units to tune and balance. And so in this
18 case, from counties, the next units would be VTDs.

19 You can draw a very reasonably balanced plan, a 1 percent
09:40:49 20 balanced plan at the VTD level. But since, as I'm sure we'll
21 discuss, it's the standard practice to balance congressional
22 districts much more tightly. At the last stage, you then break
23 those VTDs down to blocks in order to tune the population.

24 Is that what you had in mind?

09:41:09 25 Q Thank you. Yes. That's helpful.

1 A Okay.

2 Q And so you -- is it fair to say that you drew your
3 illustrative plans at the census block level?

4 A In the end, yes. I found that it was necessary to break
09:41:30 5 some VTDs in order to balance the population. And so I did so
6 at the block level, yes.

7 Q Okay. And when you tune to the block level and see VTDs
8 and then tune the population of block level, how do you decide
9 where to split precincts?

09:41:55 10 A Right. So when splitting precincts -- so, first, I tried
11 to keep as many counties whole as possible but had to break
12 some counties. And then when you decide which precincts to
13 split, those would typically be within the already split
14 counties.

09:42:17 15 By far, the largest consideration when splitting precincts
16 is one of balancing the population. And so by far, the primary
17 consideration is the total population of those blocks so that
18 you can find just the right sizes to balance the population.

19 Q And when splitting precincts to balance the population and
09:42:43 20 selecting blocks to balance the population, do you ever decide
21 where to split the precinct on the basis of race?

22 A I would describe the priority order this way: When you
23 have to split a VTD looking to balance population, as I just
24 said, by far, the first thing that I look at is the total
09:43:03 25 population of the blocks. After that, the next consideration I

1 had was compactness, trying to make kind of less eccentric and
2 more regular boundaries between districts.

3 I -- over the course of the many draft maps made, I did
4 sometimes look at race of those blocks, but really, only to
09:43:32 5 make sure that I was creating two districts over 50 percent.
6 Beyond ensuring crossing that 50 percent line, there was no
7 further consideration of race in choosing blocks within the
8 split VTDs.

9 Q Are you familiar with traditional redistricting
09:43:54 10 principles?

11 A Yes, I am.

12 Q And what are they?

13 A Okay. Well, there are many. But I would identify what I
14 call a big six.

09:44:07 15 So let me very briefly outline them. First is population
16 balance, or one person one vote. And we've discussed that
17 already. That's the idea that we should balance total
18 population across the districts in a plan. The next and also a
19 federal requirement is minority electoral opportunity. And
09:44:32 20 that's through the lens of the Voting Rights Act of 1965, as
21 well as equal protection in the constitution.

22 So those are two nonnegotiable federal requirements.

23 Next, I might list two that are fairly easy to measure.

24 And those -- although not unambiguous, but still readily
09:44:57 25 quantifiable, and those are compactness and contiguity. And

1 then we come to two that are a little bit I would say harder to
2 measure, but nonetheless very important. And that's respect
3 for political boundaries. By that, we usually mean a priority
4 on keeping intact the counties, cities, and towns generally the
09:45:24 5 municipalities, of a state. And finally, respect for
6 communities of interest.

7 Q And did you consider those principles when developing the
8 illustrative plans?

9 A I certainly did.

09:45:39 10 Q Did you also consider the redistricting guidelines adopted
11 by the state's reapportionment committee?

12 A I did.

13 MR. NAIFEH: And, Mr. Ang, can you please pull up
14 Milligan Exhibit 28? This is Document 88-23.

09:45:51 15 BY MR. NAIFEH:

16 Q The committee's guidelines include additional criteria
17 beyond those you just mentioned?

18 A They do. And if we look at this, we can see the whole
19 first page concerns itself with population and minority
09:46:14 20 opportunity to elect and equal protection. And then if we go
21 on to the next page, that very next on the list is contiguity
22 and compactness, which I've mentioned. At that point, this
23 document gets to Alabama state constitutional requirements,
24 which repeat some of the previously listed concepts, and cite,
09:46:45 25 you know, once again cite contiguity population balance,

1 discuss the number of districts.

2 After that, we get to J, which within J, we introduce
3 other principles that are frequently discussed in
4 redistricting, such as consideration for incumbency. This is
09:47:09 5 where communities of interest are cited. And if we advance to
6 the next page, we will see in part (v) of part j. mention of
7 preservation of the cores of existing districts.

8 I would note that in my reading of this, I noticed in part
9 G here that the criteria identified within j. are stipulated
09:47:39 10 not to be listed in priority order.

11 To me, the reading that I took from this, and I think the
12 reasonable reading is that the ones listed before part j.
13 should be regarded to take precedence. And so I did take this
14 document quite seriously in listing the federal requirements
09:48:05 15 first, followed by compactness and contiguity with concepts
16 like incumbency consideration and core preservation clearly
17 lower ranked.

18 Q So in your understanding, the committee guidelines create
19 a higher hierarchy of certain principles over others?

09:48:25 20 A I think they do. And I think they do so in a manner
21 consistent with what I see in numerous other states.

22 Q Thank you.

23 MR. NAIFEH: Thank you, Mr. Ang. We can take this
24 exhibit down.

09:48:36 25 BY MR. NAIFEH:

1 Q Dr. Duchin, is it possible that different traditional
2 redistricting criteria might conflict with one another?

3 A Yes. It's not just possible, it's common place. The
4 criteria are often intention. And to give just a few examples
09:48:56 5 of that, I think it's clear from what I said a moment ago that
6 exact population balance requires you to break up units and so
7 its intention with respecting political boundaries pretty
8 clearly.

9 Another classic frequently observed example is that
09:49:17 10 compactness can be intention with communities of interest. If
11 you have a well-identified community with important shared
12 interests that itself is residually located in kind of
13 elongated configuration, then you have a choice to make because
14 keeping that community whole might come at a cost to
09:49:40 15 compactness of your district. That's a frequently observed
16 instance among many where the principles can be in conflict.

17 Q In your experience, is it common to have to make trade
18 offs to -- in observing different redistricting principles?

19 A Absolutely. I would say -- go so far as to say that
09:50:04 20 redistricting is all about those trade offs.

21 Q When you prepared the illustrative plans in this case, did
22 you use -- sorry. I've got that covered.

23 Did you -- are the illustrative plans you developed the
24 only potential plans for a seven-member congressional district
09:50:20 25 in Alabama?

1 A Certainly not.

2 Q Are the illustrative plans that you developed in this case
3 the only potential plans for a seven-member congressional
4 redistricting plan in Alabama?

09:50:39 5 A They're far from the only plans. They're far from -- as
6 you heard me say before, far from the only ones with two
7 majority-black districts. I've seen thousands of examples, and
8 I know that overall, the universe of possibility in Alabama is
9 in the many trillions of trillions. So we're talking about
09:51:02 10 very large number of possible plans over all.

11 Q And so just to follow up on that, if you had a different
12 set of redistricting -- of priorities among the redistricting
13 principles, you could draw -- you would draw a different plan
14 that still contained two majority-minority districts; is that
09:51:25 15 right?

16 A That's absolutely true. And so as you heard me say a
17 moment ago, after the -- what I took to be nonnegotiable
18 principles of population balance and seeking two majority-black
19 districts, after that, I took contiguity as a requirement and
09:51:48 20 compactness as paramount following the guidelines.

21 It would be completely reasonable to take plans like mine
22 to take districts, something like my Districts 2 and 7, which
23 then kind of forces District 1 to look more or less as it does.
24 But with the remaining four districts, there's quite a lot of
09:52:13 25 latitude. You could adopt, then, a priority on maintaining

1 district cores, and easily produce a plan that performs better
2 in that regard, but you would do so at a cost particularly to
3 compactness.

4 So there are certainly trade offs. And I took the reading
09:52:36 5 of the guidelines to put a very high priority on counties and
6 compactness. But while retaining two majority-black districts,
7 many other choices could be made.

8 Q And in seeking to draw two majority-minority districts,
9 was your goal to maximize the Black Voting Age Population in
09:52:58 10 those two districts?

11 A Certainly not. We've seen from the state that it's
12 possible to have a substantially higher BVAP in a district, and
13 I can tell you that it's possible, while having two districts
14 to still have a substantially higher BVAP in a district, that
09:53:19 15 was simply not my goal.

16 Q And were there times in drawing the illustrative plans
17 when you made the decisions that had the effect of reducing the
18 Black Voting Age Population in one of the minority-majority
19 black districts in order to satisfy other redistricting
09:53:35 20 principles?

21 A Definitely. I took, for example, county integrity to take
22 precedence over the level of BVAP once that level was past
23 50 percent.

24 MR. NAIFEH: Mr. Ang, can you please bring up Exhibit
09:53:56 25 M-3? This is Document 88-3, and turn to page 7.

1 Dr. Duchin -- Mr. Ang, could you zoom in on the table?

2 BY MR. NAIFEH:

3 Q Dr. Duchin, please take a look at Table 3, which is
4 labeled, Demographics Broken Out As a Comparison of Black and
09:54:22 5 White Population.

6 A Yes.

7 Q What does this table show?

8 A This table shows the BVAP, the WVAP, BCVAP, and WCVAP. In
9 other words, the black and white shares of Voting Age
09:54:38 10 Population and Citizen Voting Age Population by district in
11 each plan.

12 Q And in each plan, that includes in the enacted plan HB-1?

13 A That's right. HB-1, as well as my plans A through D.

14 Q Okay. And turning down on the table labeled BVAP at the
09:54:59 15 top left, what does this table show?

16 A This shows that -- as I said earlier, HB-1 has one
17 majority-black district, and then drops off to around
18 30 percent while my plans A through D all have two districts
19 over 50 percent black.

09:55:17 20 Q And what definition of black is used to calculate these
21 percentages?

22 A Yes. So here still I'm using that expansive definition
23 that's sometimes called any-part black.

24 Q And then looking over to the table at the top right
09:55:36 25 labeled BCVAP, what does this table show?

1 A So this is the black share of Citizen Voting Age
2 Population. I will note that sometimes in voting rights
3 enforcement, we look to Citizens VAP, CVAP, because it's taken
4 to be a closer proxy to the electorate because citizens are
09:56:00 5 eligible to vote. And so here I look at BCVAP and find that it
6 -- generally similar that HB-1 still has only one
7 majority-black district, and all four of my plans by this way
8 of counting still have two.

9 Q And in the BCVAP table, which definition of black was used
09:56:29 10 to calculate BCVAP?

11 A So here I'll just say very briefly, I used the ACS to
12 calculate the citizenship share of adults for each racial group
13 and then applied that to the any-part black population.

14 Q So, again, using -- it uses any-part black to estimate the
09:56:53 15 citizenship share of each district?

16 A To be exactly precise, the share, the rate of citizenship
17 does not use any-part black because it's done from the ACS,
18 which doesn't have the ability to count any-part black, so that
19 citizenship rate is used with a single-race black definition,
09:57:18 20 and then is applied to the any-part black map of the state.

21 Q Okay.

22 A This is described in detail in the appendix to this
23 report.

24 Q Okay. And using the any-part black category for BVAP, are
09:57:36 25 there two districts in each of your four plans that contained

1 majority-Black Voting Age Population?

2 A Yes. I will just confirm by either of these ways of
3 counting there are two majority-black districts in each of my
4 four plans.

09:57:49 5 Q And which districts are those?

6 A Those are consistently District 2 and District 7.

7 MR. NAIFEH: Thank you, Mr. Ang. We can take this
8 exhibit down.

9 BY MR. NAIFEH:

09:58:03 10 Q Did you investigate black population in your redistricting
11 plans using any measures other than any-part black?

12 A I did, particularly in response to Mr. Bryan's report. I
13 constructed the narrowest definition of Black Voting Age
14 Population, and demonstrated that my plan A is still
09:58:31 15 majority-black, even by the narrowest construction.

16 MR. NAIFEH: Mr. Ang, can you please bring up Exhibit
17 M-7 at page 3? This is Document 88-7.

18 THE WITNESS: Thank you.

19 BY MR. NAIFEH:

09:58:45 20 Q And so using the narrowest definition of black, do any of
21 your illustrative plans contain two majority-black districts?

22 A Yes. Plan A does. As you see here, it's just over
23 50 percent, but I believe the standard to be 50 percent plus
24 one person, and so by that standard, both CD 2 and CD 7 are
09:59:13 25 majority-black, even by the very narrowest possible

1 construction that census data permits.

2 Q Thank you.

3 MR. NAIFEH: And, Mr. Ang, you can take that down.

4 BY MR. NAIFEH:

09:59:27 5 Q And other than those census categories, any-part black and
6 single-race black, did you consider any other measures of the
7 black population in evaluating your plans?

8 A I did. It was communicated to me by counsel that defense
9 expert report suggested that it would be useful to look at
09:59:46 10 voter registration data. And so I did.

11 A voter registration file was provided to me by counsel.
12 I then geocoded it myself. By that, I mean used a service to
13 obtain latitude and longitude coordinates for each of the
14 3.7 million people in the voter registration file. That's
10:00:11 15 quite a data task.

16 I will briefly say, once we have those positions, we can
17 identify the census blocks that every registered voter lives
18 in, and with that, because the form asks people to identify
19 their race, and it gives them only the option to do so with the
10:00:34 20 single racial category, we can see what people -- what voters
21 in Alabama, what registered voters in Alabama, when asked to
22 choose a single racial designation, chose black.

23 Q Okay. And did you -- after allocating each registered
24 voter to a congressional district in your illustrative plans,
10:01:04 25 did you determine the black population, black registered voter

1 population in each district?

2 A I did. And what I found is that if you look at all of the
3 addresses, all of the people in the voter registration
4 database, or if you restrict to the ones designated as active
10:01:26 5 registered voters, either way, the District 2 and District 7 in
6 my plans are actually more -- by a more substantial margin are
7 majority-black by this way of counting.

8 Q And that's in all four plans?

9 A All four plans.

10:01:44 10 Q And that's true whether you include inactive voters or
11 active voters?

12 A That's correct. It's true of the full database or the
13 subset designated as active.

14 Q And do you have an understanding of what happens if
10:01:59 15 someone although they're instructed to choose only one race,
16 chooses more than one option in the race for ethnicity
17 category?

18 A Yes. I understand from the state's information that if
19 despite being told to choose only one, if a voter when
10:02:21 20 registering selects more than one, then they're classified as
21 others and not as, for instance, black. And that means that
22 the individuals that are categorized as black truly selected
23 black and no other option.

24 Q Okay. And did you include individuals designated other
10:02:45 25 when you were determining the black population according to the

1 voter registration data in your congressional plans?

2 A I did not. I only took the ones designated black divided
3 by the total number of people registered in that district.

4 Q And did you have the opportunity to analyze the registered
10:03:05 5 voter population in the enacted plan, HB-1 plan?

6 A I did.

7 Q And what percentage of registered voters in Congressional
8 District 7 in the enacted plan self identify as black?

9 A From memory, it's over 59 percent. But I suppose we could
10:03:23 10 bring that up if we want to get the exact number.

11 Q We will take your word for it that it's about 59 percent.

12 Okay. So now I'd like to ask you -- you have an opinion
13 whether the Black Voting Age Population in Alabama is
14 sufficiently numerous to constitute a majority of voters in two
10:03:48 15 of seven congressional districts?

16 A I do. But actually, before I get to that, let me mention
17 one thing I skipped a moment ago. It's worth saying that HB-1
18 has District 7 up at over 59 percent, but still has District 2
19 far from a majority. So it's still the case by voter
10:04:10 20 registration that HB-1 only has one majority-black district,
21 just for the record.

22 Q Okay. Let me ask the last question I asked again.

23 A Yes, please.

24 Q Do you have an opinion as to whether the Black Voting Age
10:04:24 25 Population in Alabama is sufficiently numerous as to constitute

1 the majority of voters in two of seven congressional districts?

2 A I do.

3 Q And what is that opinion?

4 A It is. It is possible. It is sufficiently numerous.

10:04:39 5 Q And what is the basis of that opinion?

6 A The basis is demonstrative plans that are over 50 percent
7 black in two districts.

8 Q And specifically, can you describe which demonstrative
9 plans you're referring to?

10:04:54 10 A My demonstrative plans A through D which are over
11 50 percent black by Voting Age Population in Districts 2 and 7.

12 Q And using the single-race black definition, do you have an
13 opinion as to whether it's possible to -- whether the black
14 population in Alabama is sufficiently numerous to constitute a
10:05:16 15 majority of voters in two congressional districts out of seven?

16 A I do. This is demonstrated by my plan A, which even by
17 the very most restrictive definition has a majority of Black
18 Voting Age Population in Districts 2 and 7.

19 Q And do you have an opinion whether using voter
10:05:37 20 registration data the black population in Alabama is
21 sufficiently numerous to constitute a majority in two of seven
22 congressional districts?

23 A I do. And that opinion is that it is true, and it's true
24 by larger margins.

10:05:53 25 Q Now, I'd like to turn to the traditional redistricting

1 principles and the other factors you considered, and first, I
2 would like to ask you about contiguity?

3 A Yes.

4 Q You testified that one traditional principle is
10:06:17 5 contiguity. Can you explain what it means for a district to be
6 contiguous?

7 A Sure. In the simplest terms, a contiguous district is
8 connected. That is, it is one connected piece. In slightly
9 more technical terms, for a district that's made out of blocks,
10:06:32 10 contiguity means that it's possible to get from anywhere in the
11 district to anywhere else in the district in a path going
12 through blocks that does not leave the district.

13 Q Okay. And do the redistricting committee's guidelines
14 discuss contiguity?

10:06:52 15 A They do.

16 Q And what do the committee guidelines say about how
17 contiguity is measured in Alabama?

18 A They specify that contiguity through water is allowed.
19 They specify that they do not include what's called point
10:07:11 20 contiguity. And that would be where you have two blocks that
21 meet only at a corner. So, in other words, you need adjacency
22 along an edge or a boundary of positive length to count as
23 connected. And they also rule out what's called long-lasso
24 contiguity, where you essentially have a thread by which a
10:07:32 25 district remains contiguous.

1 Q And do the illustrative plans that you created for this
2 case contain contiguous districts?

3 A They do. There's a slightly more complicated story there.

4 In my initial submission, I included plans which, as
10:07:53 5 Mr. Bryan noted in his rebuttal report, had a small number of
6 blocks, census blocks, that were misassigned in the sense that
7 they created small islands.

8 As he correctly noted, it was easy to infer which
9 districts those were meant to belong to. And so the
10:08:17 10 consequences for population were very small. But I did submit
11 corrected plans which fixed those small block islands and
12 rebalanced the population.

13 So the plans now in evidence are contiguous by every
14 definition, are population balanced to the one-person standard,
10:08:42 15 and have all the same properties described in the report.

16 Q And after correcting the illustrative plans for those
17 stray blocks identified by Mr. Bryan, are the districts in your
18 plan all contiguous?

19 A They are all contiguous by every definition and with every
10:09:03 20 caveat identified in the guidelines.

21 Q After correcting the illustrative plans to correct those
22 stray census blocks, did you change any of your opinions on the
23 questions you were asked about in this case?

24 A I did not. And in particular, I will note the changes
10:09:23 25 were so small that not a single number in my report needed to

1 be updated. So the report stands exactly as written, with
2 respect to the corrected plans.

3 Q Okay. Just to drill down on that a little bit.

4 Did correcting the noncontiguous blocks identified by
10:09:42 5 Mr. Bryan change the percentage of any-part Black Voting Age
6 Population in any of the districts in your plans?

7 A No, not to the number of decimal places that were
8 included.

9 Q So it may have changed the absolute numbers a tiny amount?

10:09:58 10 A Certainly.

11 Q But not the percentages?

12 A In one case, the stray blocks contained no population at
13 all, and in all cases, the population was under 100 people,
14 which is not enough to change any of the conclusions at any
10:10:15 15 level in the reports.

16 Q And did correcting the noncontiguous blocks identified by
17 Mr. Bryan change the percentage of non-Hispanic single-race
18 Black Voting Age Population in Illustrative Plan A?

19 A No. Again, to be perfectly clear, not at the level, not
10:10:42 20 to the number of decimal places reported in the report.

21 Q And did correcting the noncontiguous blocks identified by
22 Mr. Bryan change the percentage of black registered voters in
23 any district in any of your illustrative plans?

24 A No, not to the number of decimal places included in the
10:11:01 25 report.

1 Q And did you recalculate the registered voter percentage
2 after correcting the noncontiguous blocks?

3 A I did.

4 Q And was it the same?

10:11:14 5 A To the level of precision included in the report, it's
6 identical. In fact, I would add just as a matter of
7 mathematics, one can easily confirm that with the number of
8 people at question, it could not have changed any of those
9 numbers to the number of decimal places included in the report.

10:11:35 10 Q I'd like to turn to population equality. You testified
11 earlier that another redistricting principle you adhered to in
12 developing the illustrative plans was equal population?

13 A Correct.

14 Q What does it mean for the population to be equal in a
10:11:54 15 congressional plan?

16 A A majority of U.S. states, but not all 50, balance their
17 congressional plans to one person top to bottom deviation, with
18 respect to total population from the decennial census. And my
19 initial set of plans, every plan was within one person of ideal
10:12:21 20 -- of rounded ideal size. And that's also true in the
21 corrected plans where there's one person top to bottom
22 deviation in all four.

23 Q Okay. And so Mr. Bryan says that after reassigning stray
24 blocks there was a greater deviation. Did you correct for that
10:12:41 25 deviation after -- when correcting for your -- correcting your

1 plans for those stray blocks?

2 A I did. So the corrections reassigned the blocks and then
3 rebalanced the population, as I said.

4 Q Okay. And so do you have an opinion about whether
10:12:59 5 plaintiffs' illustrative plans adhere to the equal population
6 principle?

7 A They do, even by the strictest possible -- mathematically
8 possible population equality.

9 Q Okay. So you testified earlier that you took into account
10:13:18 10 geographical compactness when you developed your illustrative
11 plans. How do you measure compactness?

12 A Yes. Well, this is one of the areas of my specialization.
13 So there are vast number of metrics in the literature. I've
14 counted more than 35 in the political science and geography,
10:13:44 15 scholarly literature, for measuring compactness.

16 But by far, the most common in redistricting is the use of
17 what's called the Polsby-Popper score. And particularly, the
18 average Polsby-Popper score over the districts in a plan.

19 That's one of three compactness metrics that I selected to
10:14:07 20 highlight in my reports.

21 Q And what were the other two?

22 A The next most common in redistricting is a metric called
23 Reock. It's R-E-O-C-K. And it's a metric that asks how
24 different the shape is from the smallest circle that can
10:14:30 25 contain it. So like Polsby-Popper, which compares area to

1 perimeter, both Reock and Polsby-Popper depend on the contour
2 or the outline of the district. So I sometimes refer to them
3 as contour-based metrics. So a second metric would be to take
4 the average Reock score over the districts in a plan.

10:14:56 5 I also chose to highlight a third metric, which I think is
6 becoming more popular in redistricting. And that is a discrete
7 metric called cut edges. In this case, block cut edges. It
8 looks as how the units, the blocks are separated from one
9 another in the plan.

10:15:15 10 Q Okay. And is any single -- any one of those quantitative
11 measures of compactness dispositive as to whether a given
12 district or a plan is -- can be called compact?

13 A No. And I would note the interesting thing for someone
14 like me who studies geometry, the interesting thing is that
10:15:37 15 these metrics really do measure different things so that for
16 any 2 of the 35 metrics, it's fairly easy to come up with a
17 plan, an example, the shape that looks compact by one of the
18 metrics, not so compact by the other.

19 And so they really do measure somewhat different things.
10:15:58 20 And there's a choice of emphasis when you're talking about
21 compactness.

22 For the purposes of this case, I focused on that average
23 Polsby-Popper score that I mentioned before because it is, by
24 far, the most common in redistricting.

10:16:15 25 Q And why did you in this case focus on the Polsby-Popper

1 score?

2 A So as I just mentioned, it's the most common. And so that
3 was the choice of focus. But I can also mention what
4 Polsby-Popper focuses on is how erratic the boundaries are of a
10:16:40 5 district. And so it does have a relationship to how the
6 districts look to the eye.

7 Q And did you calculate compactness measures for each
8 district or for the whole plan?

9 A I did both. In the report, I give the average scores, but
10:17:02 10 my back-up materials contain scores for every district in the
11 plan.

12 Q And why did you calculate average scores for the whole
13 plan, or why did you choose to report those in your report?

14 A Well, it's a standard way to make one plan comparable with
10:17:21 15 another. If you report the set of -- in this case, seven
16 numbers, some will be higher, some will be lower. And so a
17 standard way to make them comparable, which is reasonable for
18 my point of view, is to average the numbers.

19 Q Okay. And so in this case, did you calculate an average
10:17:46 20 compact Polsby-Popper score for each illustrative that you
21 created?

22 A I did. I computed the scores for plans A through D and
23 for HB-1.

24 Q And did you have occasion to compare the Polsby-Popper
10:18:03 25 scores for your illustrative plans to the HB-1 plan?

1 A I did. All four of my plans are significantly more
2 compact than the state's enacted plan by this common metric,
3 the average Polsby-Popper score. And perhaps it's worth
4 mentioning also significantly more compact than the enacted
10:18:25 5 plan from ten years ago.

6 Q And did you have also have occasion to compare the
7 district level Polsby-Popper scores in the illustrative plans
8 to the HB-1 plan?

9 A I did. In my plans, it is consistently the case that
10 Congressional Districts 1 and 2 are the least compact. That's
11 because they're elongated in an east to west fashion.

12 Giving them scores of roughly, if memory serves -- we can
13 pull up the numbers, but if memory serves, roughly .15. I will
14 note that those scores, which are my least compact districts,
10:19:09 15 are comparable to and in some cases better than the least
16 compact district in the current enacted plan and the enacted
17 plan from ten years ago.

18 Q Okay. And is there a particular reason why Congressional
19 Districts 1 and 2 have lower compactness scores in your plans?

10:19:28 20 A There is. As I'm sure we'll discuss, District 2 is
21 elongated in east to west fashion in order to contain as much
22 as possible of the Black Belt. That Black Belt of 18 counties,
23 it was an express goal of mine to keep that as much as possible
24 within majority-black districts.

10:19:53 25 By doing that, because of the way the population is

1 distributed in the state, it creates District 1 to the south,
2 which is also very elongated east to west.

3 So the goal of securing representation in a majority-black
4 district for the Black Belt is what creates those relatively
10:20:17 5 low, but clearly still acceptable compactness scores in
6 Districts 1 and 2 in my plans.

7 Q Okay. And although they're lower than other districts in
8 your plan, in your opinion, are Congressional District 1 and
9 Congressional District 2 reasonably compact in all of your
10:20:39 10 illustrative plans?

11 A Yes. I think they are. And I'll just repeat they're
12 comparable to or better than the least compact districts in the
13 state's enacted plan that was voted through recently, as well
14 as the state's enacted plan from ten years ago.

10:21:00 15 Q And turning now to communities of interest, you testified
16 earlier that another redistricting principle you bore in mind
17 when drawing your illustrative plans was communities of
18 interest?

19 A Yes.

10:21:19 20 Q How do you define a community of interest?

21 A Well, in this case, the Alabama guidelines have language
22 concerning communities of interest that I found to be apt and
23 to be consistent with definitions in other states.

24 If I recall correctly, the shared interests that
10:21:40 25 constitute a community per the guidelines include common

1 economics, common racial and ethnic characteristics, common
2 history, common culture and so on. These are some of the --
3 and if we want to -- that's a paraphrase, but I would be happy
4 to take a look if we wanted to pull that out in order to be
10:22:02 5 more precise.

6 Q And in this case, what information did you consider when
7 trying to preserve communities of interest?

8 A I will note that in some states the state or a
9 state-affiliated office undertook a community of interest
10:22:21 10 collection process from the public in which members of the
11 public, including legislators were invited to identify
12 communities through mapping software.

13 I'm not aware of any such effort in Alabama. And I did
14 check the state's redistricting website to see if any such
10:22:42 15 thing had been undertaken.

16 Not finding a collection process like that, it's hard to
17 develop a metric around public testimony. And so I relied on
18 two examples, two kinds of communities of interest that I have
19 already alluded to. And one is the cores of cities in Alabama,
10:23:09 20 which I believe clearly meet the definition of a community of
21 interest provided in the guidelines. And the second is the
22 Black Belt across the state, which I also believe clearly to
23 meet the definition provided in the guidelines.

24 Q Okay.

10:23:28 25 MR. NAIFEH: And, Mr. Ang, can you pull up exhibit

1 M-28? This is again the redistricting guidelines
2 Document 88-23.

3 Mr. Ang, can you scroll down? I believe it's the third
4 page. Back up one.

10:24:00 5 THE WITNESS: There we are.

6 BY MR. NAIFEH:

7 Q It's at the bottom of page 2. Is that the definition that
8 you were referring to earlier?

9 A Yes. And so recognized similarities of interests,
10 including but not limited to ethnic, racial, economic, tribal,
11 social, geographic, or historical identities.

12 Exactly.

13 Q And it says there at the bottom that it can include?

14 A It can include in certain circumstances political
10:24:29 15 subdivisions, such as counties.

16 MR. NAIFEH: And can you go on to the next page,
17 Mr. Ang?

18 THE WITNESS: Great. Counties voting precincts,
19 municipalities, tribal lands and reservations, or school
10:24:44 20 districts.

21 MR. NAIFEH: Thank you, Mr. Ang.

22 BY MR. NAIFEH:

23 Q And does -- in your understanding, does the community of
24 interest principle mean that an entire congressional district
10:24:59 25 must form a single community of interest?

1 A No. And I think that's sometimes a common
2 misunderstanding. I don't think that respect for communities
3 of interest means that every district should itself be a single
4 unitary community. That wouldn't work because communities can
10:25:20 5 be of all sizes and are not necessarily the exact size of
6 congressional districts, which after all, are very large, over
7 700,000 people.

8 Instead, I believe that what it means is that communities
9 should be taken into account when you draw so that either
10:25:39 10 they're kept whole within a district, or if it's appropriate,
11 split among several in a way that amplifies their opportunity
12 to be heard by their representative.

13 Q So, in other words, there may be more than one community
14 of interest in a given congressional district?

10:25:59 15 A There certainly will, without fail, be more than one
16 community of interest within a congressional district.

17 Q And are the criteria for or the definition of community of
18 interest, is that an objective definition?

19 A Well, as it's written in law or in guidelines like these,
10:26:21 20 it's, of course, somewhat vague. There have been efforts to
21 try to make it more concrete and more quantifiable, that
22 usually start with a public collection process, as I mentioned
23 a little earlier.

24 Q So when you are serving the public about their communities
10:26:43 25 of interest, is it possible that different people might

1 identify with different communities of interest?

2 A It is a certainty. When you ask people about their
3 communities, the nature of community is that you will get many
4 different kinds of account. Some of them will be continent and
10:26:58 5 will allow you to create a kind of small consensus so that you
6 have a community supported by the testimony of many people.
7 But inevitably, on even more than what some of the other
8 principles, there are trade offs, because communities can and
9 will overlap. So sometimes it's impossible to preserve one
10:27:23 10 without breaking another. So even within this principle, there
11 are trade offs to consider.

12 Q When developing your illustrative plans in this case, what
13 communities of interest did you consider?

14 A So the two communities of interest that I prioritized are
10:27:40 15 the two that I mentioned earlier, which are urban cores and the
16 18 counties that constitute the rural Black Belt.

17 I will mention that I am aware that there are many, many
18 other important and salient communities in Alabama, and I
19 prioritized these two that I believe to clearly and
10:28:05 20 unambiguously correspond to the language in the guidelines.

21 Q And in your opinion, do the illustrative plans respect
22 communities of interest?

23 A Yes. My plans A through D are designed to do so. And one
24 way that they do so is by taking upwards of 16 out of the 18
10:28:29 25 Black Belt counties in each case and keeping those in

1 majority-black districts.

2 Q And you mentioned also that municipalities or counties or
3 other political subdivisions can also constitute a community of
4 interest. Did -- in your opinion, do the illustrative plans
10:28:51 5 respect those communities of interest?

6 A They do. There's a marked respect not only for counties,
7 which I think is unmistakable in the plans, but also for
8 municipalities.

9 And I will note there that because the technical
10:29:08 10 boundaries of municipalities can be very erratic, that on a
11 community level, it's often that urban core that's most salient
12 from a community.

13 Q You also testified the guidelines -- the redistricting
14 committee's guidelines include as an additional criteria the
10:29:36 15 cores of prior districts?

16 A Yes.

17 Q What does preserving the cores of prior districts mean?

18 A Informally, it means that new districts should resemble
19 the previous districts. Often, that's measured in one of two
10:29:53 20 ways; by looking at the area overlap or the territorial overlap
21 between a new district and its corresponding its counterpart in
22 the older plan, or by looking at the population that's either
23 retained or displaced.

24 Q And do the illustrative plans preserve the cores of prior
10:30:17 25 districts?

1 A No. I would characterize my Illustrative Plans A through
2 D as not particularly preserving the cores of the prior
3 districts.

4 Q And why is that?

10:30:30 5 A I judge it to be impossible to have as high of a core
6 preservation as, for instance, you see in the newly enacted
7 plans, while also having two majority-black districts. Just to
8 expand on that briefly, since the older plan has one
9 majority-black district, and then a significant drop off to,
10:30:54 10 you know, about 30 percent, it's again mathematically
11 impossible to create two majority-black districts without a
12 significant level of population reassignment from one District
13 to another. Because I regard the protection of minority
14 electoral opportunity to be a nonnegotiable federal
10:31:19 15 requirement, that necessitates a significant level of core
16 displacement.

17 Q Okay. And so that -- and then in the outside of those two
18 majority-black districts, were there -- can you explain why
19 your plans don't preserve cores to the extent it's of the
10:31:39 20 enacted plan?

21 A Yes. Absolutely.

22 So I read the guidelines to put core displacement as a
23 priority below compactness and the preservation of counties, in
24 particular compactness. And so I would note that one could
10:32:01 25 take my illustrative plans, retain something very much like my

1 Districts 2 and 7 and therefore District 1, and with the
2 remaining four districts, one could adopt a different
3 prioritization. And indeed if core preservation were elevated
4 at that point, it would be quite easy to reconfigure those four
10:32:25 5 districts to more resemble the previous enacted plan. I will
6 just note that you would be doing so expressly at the cost of
7 compactness.

8 Q So, in other words, you read the guidelines as requiring
9 compact districts more than core preservation, but if you read
10:32:44 10 them the other way, you could preserve cores to a greater
11 extent than you did?

12 A I think it's difficult to read them another way, but if
13 you elected to prioritize cores over compactness, you certainly
14 could do so, and that would greatly improve those displacement
10:33:02 15 numbers in my plan while maintaining two majority-black
16 districts.

17 Q And you also testified earlier that protecting minority
18 voting strength is a traditional redistricting criteria. What
19 does it mean to protect minority voting strength for avoid
10:33:28 20 dilution of minority voting strength?

21 A Well, in the context of *Gingles I* demonstration, it means
22 to draw districts that have a majority of -- in this case,
23 Black Voting Age Population while still being maximally
24 respectful to the other traditional principles. In other
10:33:48 25 words, in other words, what's at issue here is the opportunity

1 to elect candidates of choice.

2 Q And what do the illustrative plans do to unable that
3 opportunity?

4 A Well, in particular, here they pass the threshold of
10:34:08 5 50 percent plus 1, so they create two majority-black districts
6 in which I believe together with the evidence of other experts
7 we can see there will be a clear opportunity to elect
8 candidates of choice.

9 Q And so based on what you have told us so far today, did
10:34:33 10 you form an opinion as to whether the black population in
11 Alabama is sufficiently numerous and geographically compact to
12 comprise a majority of voting age population in two
13 congressional districts?

14 A I did. As we heard, there were two majority-black
10:34:48 15 districts, and the plan as a whole is highly respectful of
16 other traditional districting principles, and in particular, is
17 highly compact. The compactness of the plan is itself a
18 demonstration that the population is compact enough to do so.

19 Q And are the illustrative plans the only potential remedy
10:35:10 20 for vote dilution in Alabama's congressional plan?

21 A They are far from the only possible remedy, and I leave it
22 to the Court to determine whether majority-black districts are
23 necessary as a remedy. And here, they're clearly demonstrated
24 to meet the *Gingles I* requirement.

10:35:27 25

1 MR. NAIFEH: Thank you, Dr. Duchin. I have no more
2 questions at this time.

3 JUDGE MARCUS: All right. It looks to me like this
4 might be a convenient time for our break. I have 10:35 your
10:35:42 5 time in Alabama Central Standard and 11:35 in Eastern Standard
6 Time. We'll take a 15-minute break.

7 I take it, Mr. LaCour, you are going to conduct the bulk
8 of the cross, or the cross for the Secretary of State?

9 MR. LACOUR: That's correct, Your Honor.

10:36:03 10 MR. NAIFEH: Your Honor, actually, there was one more
11 issue I wanted to raise with Dr. Duchin.

12 JUDGE MARCUS: Sure. Let's go back so you can finish
13 your direct, and then we'll break. Fire away.

14 MR. NAIFEH: Mr. Ang, can you please bring up
10:36:21 15 Exhibit 48, M-48, that's Document 92-1? And I will note for
16 the Court and for the record that this is one of the exhibits
17 that defendants have objected to, and I would like to lay the
18 foundation for getting it admitted.

19 JUDGE MARCUS: Sure.

10:36:49 20 BY MR. NAIFEH:

21 Q Dr. Duchin, on the screen is the document that has been
22 marked as exhibit M-48.

23 MR. NAIFEH: Mr. Ang, could you scroll through? I
24 think it's three pages.

10:37:06 25 BY MR. NAIFEH:

1 Q Dr. Duchin, do you recognize this document?

2 A I do.

3 Q And can you tell me what it is?

4 A This is a supplemental report that I filed whose focus is
10:37:18 5 the voter registration numbers that I described earlier.

6 Q And is this a complete copy of that report that you
7 executed on December 27th?

8 A Yes. It's quite a short report.

9 Q Okay. And it contains the information you have already
10 testified to concerning your analysis of voter data. Is that
11 what you stated a moment ago?

12 A Yes. With a bit more precision about the process, it
13 contains exactly the same information.

14 Q Okay.

10:37:52 15 MR. NAIFEH: I would like to move Milligan Plaintiffs'
16 M-48 into evidence.

17 JUDGE MARCUS: Let me hear from the state.

18 Mr. LaCour, I take it there was an objection on timeliness
19 ground?

10:38:03 20 MR. LACOUR: There was, Your Honor.

21 JUDGE MARCUS: Then the judges will be able to confer
22 amongst themselves and give you a ruling. I take it you would
23 want a ruling on this before you commence your cross?

24 MR. LACOUR: That would be -- that would be helpful,
10:38:21 25 Your Honor.

1 JUDGE MARCUS: Okay. Let's go right to the argument.

2 Tell me about timeliness. They admit it's slightly off
3 the time base. You tell me why we should hold them to that in
4 the context of the exigencies of the time boundaries we have
10:38:45 5 all been operating under.

6 MR. LACOUR: I think for that same reason, Your Honor,
7 it's we are also trying to prepare for -- we were also trying
8 to prepare for the hearing and trying to prepare witnesses,
9 trying to get ready for numerous cross-examinations, and we had
10:39:04 10 two reports from Dr. Duchin already, received a third report.
11 There's not a whole lot of time to really dig in. So I mean
12 our objection is strictly on the timeliness grounds. And
13 that's essentially our argument.

14 JUDGE MARCUS: Let me ask you just a question or two
10:39:21 15 about that.

16 This report was prepared and received on the 27th of
17 December. That was about ten days ago. I take it, it has been
18 given to and reviewed by Mr. Bryan, your expert.

19 MR. LACOUR: I -- I have not been working as closely
10:39:46 20 with Mr. Bryan, so if someone else is out there in the Zoom
21 world who could chime in, I'd welcome --

22 JUDGE MARCUS: I wanted to make sure there has been --
23 bear with me. I wanted to make sure that Mr. Bryan had the
24 opportunity to review the supplemental report of Dr. Duchin,
10:40:08 25 which was dated 27 December.

1 MR. LACOUR: I have no reason to think he has not had
2 that opportunity. But, Jim, if you are on, you might be able
3 to provide a definitive answer.

4 MR. DAVIS: Your Honor, if I may step in a moment.

10:40:29 5 JUDGE MARCUS: You sure can.

6 MR. DAVIS: I can respond to your question. Mr. Bryan
7 has not reviewed this supplemental report, but we do not deny
8 that we had the opportunity to provide it to him. This report
9 was just not focused in on the areas that Mr. Bryan discusses
10:40:48 10 and that he will discuss in his testimony. So he has not
11 reviewed it, but we do not dispute that we have had since the
12 27th to provide it to him, had we felt the need to do so.

13 JUDGE MARCUS: Okay. Thank you much. Anything
14 further on this issue from Mr. Naifeh, from you or from
10:41:07 15 Mr. LaCour, Mr. Davis? If not, we will take it under at
16 advisement and give you a ruling shortly.

17 MR. NAIFEH: This is Stuart Naifeh for the plaintiffs.
18 I just want to note that there was no objection to Dr. Duchin
19 testifying about the same information that is contained in this
10:41:23 20 report. So that, you know, if there had been a concern that
21 they had not had -- if that information was outside the scope
22 or anything like that of her initial reports, that objection
23 has now been waived.

24 JUDGE MARCUS: Anything further, Mr. LaCour?

10:41:40 25 MR. LACOUR: Nothing further at this time, Your Honor.

1 JUDGE MARCUS: Okay. It is now by my count 11:41. We
2 will -- 10:41 your time, 11:41 my time. We will reconvene at
3 12:00 o'clock Eastern Standard, 11:00 o'clock Central Standard
4 Time. We will be in recess until about 11:00 or 12:00 o'clock
10:42:09 5 respectively. Thank you.

6 (Recess.)

7 JUDGE MARCUS: Do we have everybody assembled? We
8 have counsel for the state, Mr. LaCour?

9 MR. LACOUR: Yes, Your Honor.

11:00:53 10 JUDGE MARCUS: And we have counsel for the Milligan
11 plaintiffs, who is conducting the examination of Dr. Duchin,
12 correct?

13 MR. NAIFEH: Yes, Your Honor.

14 JUDGE MARCUS: So are we ready to proceed, folks? I
11:01:04 15 just wanted to make sure.

16 MR. NAIFEH: Milligan plaintiffs are ready to proceed.

17 JUDGE MARCUS: Mr. LaCour, are you ready to proceed?

18 MR. LACOUR: Yes, Your Honor.

19 JUDGE MARCUS: Before we start the cross-examination,
11:01:17 20 we note the objection to M-48, which was the supplemental
21 expert report of Dr. Duchin filled on the 27th of December.
22 The objection that was interposed was on the grounds of it
23 being untimely by some seven days.

24 The objection is overruled. We will permit and receive
11:01:45 25 M-48, the supplemental report of Duchin into the record. A

1 series of reasons lead us to that conclusion. I have counseled
2 with my colleagues about the matter. And we believe that, one,
3 there was more than sufficient time over the last 10 or 11 days
4 to make what use of it that you might. And it was your call,
11:02:15 5 Mr. LaCour, whether to show it or not to Dr. Bryan.

6 Two, under the Federal Rules of Civil Procedure Rule
7 6(b)(1)(B), the Court has the power to extend a time for a
8 sufficient reason. We're satisfied, given the exigencies of
9 the time and the compressed nature of the discovery that
11:02:45 10 there's ample reason to excuse the failure to timely file the
11 report of Dr. Duchin.

12 Third, it's worth observing that, in effect, she had
13 already testified about the substance of the supplemental
14 report on direct examination without any objection. So the
11:03:11 15 substance of it has already been come in. Theoretically, we
16 could strike that for the record. But for the reasons that
17 I've stated, we're not prepared to do that.

18 The objection is overruled. M-48 is received. And with
19 that, you may proceed with your cross. Thank you, Mr. LaCour.

11:03:32 20 MR. LACOUR: Thank you, Your Honors.

21 CROSS-EXAMINATION

22 BY MR. LACOUR:

23 Q Dr. Duchin, thank you for being with us. May name is
24 Edmund LaCour. I represent defendant Secretary of State of
11:03:45 25 Alabama John Merrill.

1 A Hello.

2 Q I would like to start with a couple of statements from
3 pages 7 and 9 of the reports. It's pretty brief, so I don't
4 pull it up on the screen unless you would like me to.

11:03:57 5 You note that Black Voting Age Population in Alabama is
6 about 26 percent. Black Alabamians make up a majority in only
7 14.3 percent of congressional districts in the state. And that
8 White Voting Age Population is about 65.5 percent, meaning
9 that, quote, proportional representation for white voters would
11:04:20 10 be between 4.4 and 4.6 of Alabama's seven seats in the U.S.
11 house, correct?

12 A Correct.

13 Q So you are stating the enacted map does not result in
14 proportional representation for white and black Alabamians?

11:04:34 15 A Well, to be careful, that depends on, of course, how
16 people vote. But it's certainly the case that majority-white
17 districts are present in the enacted plan super proportionally
18 with respect to population.

19 Q So if more white Alabamians voted differently, would
11:05:04 20 blacks be proportionally represented in Alabama?

21 A Certainly. As I just said, everything depends on how
22 people vote. I'm sorry. Am I understanding the question
23 correctly?

24 Q I was just trying to figure out what -- through the import
11:05:23 25 was of your observation that while black Alabamians make up

1 26 percent of the state, white Alabamians, 65.5, white
2 Alabamians hold 4.4 to 4.6 congressional -- you would expect --
3 it seems like you're suggesting you would expect 4.4 to 4.6 of
4 congressional seats to be majority white districts and
11:05:52 5 something higher than 14.3 percent of districts to be majority
6 black. So to clarify, no, that's not what that meant?

7 A It's mentioned with respect to the traditional
8 understanding that in applying voting rights, one doesn't seek
9 to go past the level of proportionality. Not that it's an
11:06:19 10 expectation, but that it has sometimes functioned de facto as a
11 ceiling in voting rights law.

12 Q And if one of your illustrative plans or another plan that
13 created two majority-black districts was either enacted by the
14 Legislature imposed by a court, black Alabamians would then be
11:06:40 15 a majority in what, 28.6 percent of congressional districts?

16 A That sounds about right. Two out of seven should be about
17 that.

18 Q Okay. Which would be greater than proportional
19 representation?

11:06:57 20 A I believe so we just said the population proportion is
21 about 26 to 27 percent black. I believe that projects out to
22 1.8, 1.9 seats, something like that. And so two would be the
23 closest. Since we can't have fractional seats in the end, two
24 would be the closest to that number.

11:07:18 25 Q Right. And I mean, wouldn't you agree that generally in

1 congressional districting in the United States, even with very
2 neutral redistricting processes observed, seldom produce
3 proportional results?

4 A To clarify, that results are not typically proportional.

11:07:38 5 That's the question?

6 Q Correct.

7 A I agree that I've looked at all states with significant
8 populations of minority groups and that often the
9 representation it's close, but falls short of proportionality.

11:07:58 10 That's correct.

11 Q Even with a neutral redistricting process, correct?

12 A It's hard to speak to the details of the processes in all
13 the states.

14 Q In 2019, you published a study on congressional districts
11:08:13 15 in Massachusetts, didn't you?

16 A I did. In the *Election Law Journal*.

17 Q Yeah. It was fairly interesting.

18 A Thank you.

19 Q Is it fair to say that you found that even though
11:08:23 20 Massachusetts Republican candidates often received between 30
21 and 40 percent of the two-way vote share in statewide elections
22 in Massachusetts, you wouldn't expect to see a map 30 percent
23 of the Commonwealth's nine congressional seats for the GOP?

24 A Actually, it's even stronger than that, the finding. Can
11:08:44 25 I briefly describe it?

1 Q That would be great.

2 A Thanks.

3 The finding is that over a ten-year span, about a third of
4 Massachusetts voters select a Republican in statewide contests.

11:08:59 5 But it's not only unlikely, it is on the nose mathematically
6 impossible to draw a congressional district in Massachusetts
7 that would have Republican majority. And so the finding is one
8 of impossibility, which is expressly not the case in Alabama,
9 as we saw in my testimony.

11:09:18 10 Q And we will get to it in just a moment. I think I found
11 it interesting you said -- does this sound like an accurate
12 quote? There are more ways of developing a valid districting
13 than there are particles in the galaxy. Every single one of
14 them would produce a 9-0 Democratic delegation?

11:09:35 15 A It's surprising, but true that it's literally impossible
16 to draw a Republican district in those conditions merely as a
17 matter of the political geography of where people live.

18 Q Right. Because -- that is also because of certainly
19 traditional districting criteria that are observed in the
11:09:56 20 Commonwealth, correct?

21 A You would actually surprised how strong the result is.
22 Even if you let go of contiguity, you still can't draw such a
23 district. It's quite a strong finding.

24 Q Uh-huh. And that's in part because you don't have many
11:10:11 25 parts of Massachusetts that are majority Republican, right?

1 A Exactly. As we describe it in the paper, it's that
2 Republicans while plentiful in Massachusetts are really spread
3 evenly throughout the state. That's exactly right.

4 Q Uh-huh. They're well integrated with their Democratic
11:10:30 5 brothers and sisters?

6 A I would call it uniform. And as I have said in the past,
7 it seems like Republican voters are a third of the state, a
8 third of every town, and maybe a third of every household.

9 Q Got it.

11:10:44 10 So return to Alabama. If all we knew, and just speaking
11 hypothetically here, if all we knew was that black Alabamians
12 made up 26 percent of the state, and that they formed
13 majorities in only 14.3 percent of the congressional districts,
14 that wouldn't tell us very much about the fairness of the
11:11:05 15 representation in the map, would it?

16 A Absolutely. That's -- that's precisely -- I agree with
17 you. That's what's shown in that Massachusetts paper is that
18 you have to look at what's possible.

19 Q Right. And again, going off this sort of blank
11:11:23 20 hypothetical slate, would it be kind of surprising if the
21 minority group, political or racial, made up a greater than
22 proportional -- made up a majority in a higher percentage of
23 districts than they are composed within the state?

24 A Sure. That happens all the time. If I understood -- let
11:11:48 25 me make sure I understood you.

1 Q I guess I'm trying to say, would it surprise you to -- if
2 let's say in Massachusetts, well hypothetical state of
3 Columbia. You have got 30 percent of people in the green
4 party. Would -- and 70 percent of people are Libertarians.

11:12:09 5 Would it be surprising for a congressional district to produce
6 majority green party districts in 35 percent of the districts
7 allotted to that hypothetical state?

8 A So the population share went to 35 percent, my
9 understanding?

11:12:29 10 Q The population share is 30, and they end up with
11 majorities in 35 percent of the districts.

12 A It's hard to know whether to characterize that as
13 surprising, because I'd need to know a lot more about the
14 situation. But what I take to be the point is that it can
11:12:47 15 often happen that the representation share is different from
16 the population share. That's certainly true.

17 Q Does it often skew a little in favor of the majority and a
18 little against the minority?

19 A That is frequently observed, although, I've just come back
11:13:05 20 from testifying in North Carolina, as I mentioned earlier,
21 where there are maps in play that -- that actually tend to give
22 majority representation to a minority of the votes. That can
23 also happen.

24 Q That evidence, in your mind, that they're not following
11:13:23 25 neutral something criteria?

1 A It really need to be assessed on a case-by-case basis.

2 Q In North Carolina, where you testified, did you take that
3 as evidence that neutral districting criteria were not being
4 followed?

11:13:36 5 A There's so much other evidence in play there, that I
6 wouldn't want to attribute it to a single piece of evidence.

7 Q But did that support the theory that something was afoot,
8 either racial or political? I'm not sure what the theory of
9 the case is.

11:13:56 10 A Right. I think I can say that it supported a conclusion
11 of a partisan intent on my part.

12 Q Okay. Do you know how many counties are in Alabama
13 altogether?

14 A I don't have the number in front of me.

11:14:14 15 Q Would 67 sound right?

16 A That sounds about right, yes.

17 Q And do you know how many of them are majority-black?

18 A Not off the top of my head.

19 Q If I told you it was around 11, would that sound -- that
11:14:31 20 sound right?

21 A I can work off of that assumption in the following
22 questions.

23 Q I want to pull up a map real quick that I think is --
24 might be helpful.

11:14:44 25 A Thank you.

1 Q All right. So can you see this map now, Dr. Duchin?

2 A I can. Yes.

3 Q I will represent to you this is Defendants Exhibit -- I

4 believe this is Defendants' Exhibit 2, page 38. Mr. Bryan

11:15:19 5 prepared this. And he purports to show the counties in

6 Alabama, and then marks them for black alone Voting Age

7 Population by county. Do you see that?

8 A I do.

9 Q And so does my cursor show up on your screen?

11:15:40 10 A I see it.

11 Q The little hand?

12 A Yes.

13 Q So we have got the Black Belt counties kind of running

14 sort of in this -- I think this is Pickens County here and

11:15:47 15 running down this direction. And many of them are

16 majority-black voting age. But some of them just barely. And

17 some of them below majority. Is that fair?

18 A I accept that representation.

19 Q Okay. All right. Back out of that. And I think you

11:16:13 20 reported that the Black Belt as a whole has only about 300,000

21 black residents. Does that sound right?

22 A We'd have to look at the numbers, but I remember it to be

23 over 300,000.

24 Q Okay. If your report said -- make sure I'm quoting the

11:16:35 25 chapter and verse. Happy to pull this up.

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1 You said -- this is page 10 of your report Milligan
2 Exhibit 3. The Black Belt region has over 300,000 black
3 residents?

4 A Correct.

11:16:50 5 Q All right. So something else I wanted to touch on from
6 page 2 of your report. You said that because Alabama's
7 any-part black population is 27.16 percent, the total
8 population group is, quote, large enough to constitute
9 majorities of three out of seven congressional districts
11:17:15 10 because it takes about 7.2 percent of the population, to
11 constitute the majority in a district. Is that correct?

12 A Yes.

13 Q Okay. Geographic constraints explain why you cannot draw
14 a map with three majority-black congressional districts,
11:17:34 15 correct?

16 A Where you cannot, is that what you said?

17 Q Correct. Yeah. Why you could not?

18 A Agreed. It's the exact same principle that we just
19 discussed in Massachusetts. The numbers alone don't tell you.
11:17:45 20 You have to look at what's possible.

21 Q Uh-huh. So you didn't have any maps that tried to unite
22 black voters in Huntsville with black voters in Birmingham and
23 Dothan, correct?

24 A I'm sorry. Are you asking if I attempted precisely to
11:18:02 25 follow those goals?

1 Q You didn't present -- did you try to draw any maps that
2 looked like that, that united black voters from the northern
3 most of the state to the southernmost part of the state?

4 A Well, that was certainly never an express goal to unite
11:18:20 5 voters from the very north and voters from the very south.

6 Q So question: Do you know if any of the plans your
7 algorithm generated produced maps that look like that?

8 A But, again, I think you mean that contain districts
9 spanning all the way from north to south; is that right?

11:18:44 10 Q That united black voters in Huntsville?

11 A Right.

12 Q You focused on in your report and Mobile?

13 A I certainly never saw a district connecting Huntsville to
14 Mobile.

11:18:54 15 Q Okay. And why was that?

16 A Well, it's hard to say why to an empirical question. I
17 never saw such a district.

18 Q Okay. And returning to your math about 7.2 percent of the
19 state's population being all that's needed to draw a majority
11:19:16 20 district, by that math, and this is lawyer math, would it take
21 only about 50.4 percent of voters statewide to form a majority
22 in each of the seven congressional districts?

23 A Right. So since we've been discussing this Massachusetts
24 paper, this is what we call an arithmetic or numerical test.

11:19:41 25 It's just are the numbers sufficient. So that's all that it

1 looks at is numbers alone, and the point of discussing that is
2 to say that that's not sufficient for redistricting. You need
3 to not only look at the numbers, but also look at the
4 geography.

11:19:57 5 Q Right. But mathematically, if we were to discard
6 traditional redistricting criteria, it would be possible to
7 draw -- there are a majority of whatever group if that group
8 made up 50.4 percent of voters statewide?

9 A Yes. I'm sorry. I didn't mean to talk over you at all.

11:20:19 10 Q Oh, not at all.

11 A That's right. If you have a bare majority statewide, it
12 is theoretically possible to recapitulate that majority in each
13 district. Each district could be a microcosm of the state.
14 That is theoretically possible, although difficult to achieve
11:20:37 15 in practice.

16 Q But that did happen in Massachusetts in a sense?

17 A Well.

18 Q They have a larger than 50 percent majority? I apologize.

19 JUDGE MARCUS: Let's just take our time. Let
11:20:57 20 Mr. LaCour finish his question, Dr. Duchin, before you give him
21 an answer. And, Mr. LaCour, let Dr. Duchin answer completely
22 before you proceed with the question.

23 Thank you. Let's take the next question.

24 BY MR. LACOUR:

11:21:14 25 Q Dr. Duchin, would it sound about right if I told you that

1 Republican presidential candidates in Alabama have obtained
2 over 60 percent of the vote in the last three general statewide
3 elections?

4 A Yes. I know that to be true.

11:21:29 5 Q Okay. So a map in which Republicans make up a majority in
6 all seven districts are mathematically possible in Alabama?

7 A That does not follow. Because now you said a map that
8 does. So you've brought geography into the question.

9 Q So traditional districting principles might inhibit that
11:21:51 10 result, but mathematically it could potentially be possible?

11 A I'm just going to keep distinguishing so that I can be
12 careful. Numerically, it would be possible.

13 Q Okay. And a guideline for redistricting like core
14 retention of districts might help explain why the 2021 map
11:22:14 15 includes only six majority Republican districts instead of
16 seven, even though it was enacted by a majority Republican
17 House and majority Republican state Senate?

18 A Certainly. If core retention is prioritized over minority
19 electoral opportunity, that would be an explanation.

11:22:33 20 Q Or if core retention was prioritized over partisan
21 interest, correct?

22 A I don't believe I've been discussing partisan interest at
23 all, and it wasn't part of my analysis.

24 Q Okay. Fair enough.

11:22:49 25 On the second page of your report, again, this is Milligan

1 Exhibit 3, you state -- you were asked to draw plans that
2 establish that it's possible to create two majority-black
3 districts in a map that maintains population balance,
4 reasonable compactness, respect for local boundaries -- I will
11:23:17 5 start over. I apologize for -- let me start over.

6 So on page 2, you state, I was asked --

7 JUDGE MARCUS: Just so that I am clear, you are
8 referring to page 2 of what? Of the Exhibit M-3?

9 MR. LACOUR: Yes, Your Honor.

11:23:38 10 JUDGE MARCUS: Thank you.

11 BY MR. LACOUR:

12 Q You state, I was asked to draw plans, establish that it is
13 possible to create two majority-black districts in a map that
14 maintains population balance, reasonable compactness, respect
11:23:55 15 for boundaries, and other traditional redistricting principles.
16 In particular, I was instructed to emphasize Polsby-Popper
17 inspirometric definition of compactness. What do you mean by
18 emphasize the Polsby-Popper definition of compactness?

19 A Sure. I mean that in two ways. One, that compactness is
11:24:21 20 important, that I took it to be a very highly ranked priority.
21 And, two, that within the ways of measuring compactness, I
22 selected that metric for emphasis. Does that make sense?

23 Q Yes. Let's see.

24 So did you give compactness more weight than some of the
11:24:49 25 other traditional districting principles?

1 A I did. I would clarify or expand that I took population
2 balance and minority electoral opportunity to be nonnegotiable
3 requirements, and after that, took contiguity and compactness
4 to be highest ranked following the Alabama guidelines.

11:25:15 5 Q Okay. I'd like to touch on that. I mean, you also stated
6 on page 2 -- I will go ahead and pull this up.

7 I may have too many windows. I apologize.

8 JUDGE MARCUS: Take your time.

9 BY MR. LACOUR:

11:25:52 10 Q All right. Are we looking at -- this is Milligan
11 Exhibit 3. I am going back to page 2. So this final
12 paragraph.

13 JUDGE MARCUS: Just so we're clear for the record,
14 this is Dr. Duchin's one of her reports, right?

11:26:21 15 MR. LACOUR: Right.

16 BY MR. LACOUR:

17 Q This is your initial report, Dr. Duchin, Milligan
18 Exhibit 3. You said, These two majority districts can be drawn
19 without sacrificing traditional districting principles like
11:26:31 20 population balance, contiguity, respect for political
21 subdivisions like counties, cities and towns, or the
22 compactness of districts, and with heightened respect for
23 communities of interest.

24 Now, you don't reference what I think you refer to as one
11:26:44 25 of your six districting criteria, correct.

1 A Let's see. One, two, three, four, five and so, of course,
2 this doesn't include what was in bold in the previous sentence,
3 which is minority electoral opportunity.

4 Q Correct. So I didn't -- when I had read this initially, I
11:27:12 5 did not read that as one of the goals that was necessarily
6 informing the drawing of the maps, but so -- but you did state
7 before that was one of your nonnegotiable criteria, correct?

8 A Correct. I would call it the principle goal, and as you
9 heard, the principle assignment in this case was precisely that
11:27:40 10 question.

11 Q So that -- how did that work with the other five criteria?

12 A Great. So the question is one of possibility as I have
13 highlighted repeatedly. And so though you have trade offs
14 among the principles, the goal was to create two majority-black
11:28:09 15 congressional districts while balancing the other principles as
16 well as possible. Is that responsive?

17 Q It's helpful. I think so.

18 So you talked before about keeping counties whole versus
19 strict compliance of one person one vote. And it's almost
11:28:31 20 impossible -- likely impossible in most plans to do both,
21 correct?

22 A Correct. Fundamental trade offs exist.

23 Q So when you decided to strictly add here to one person one
24 vote, that criteria took precedence over keeping counties
11:28:54 25 whole?

1 A That's right. Counties are split in order to comply with
2 one person one vote.

3 Q Okay. Why did you decide to comply so strictly with
4 one person one vote?

11:29:10 5 A The practice as I mentioned earlier in a majority of U.S.
6 states is to attain de minimus population deviation. And
7 that's regarded as dominant practice in the field. And so I
8 undertook to achieve that level of balance.

9 Q If Alabama's guidelines had provided greater deviation
11:29:45 10 that made that possible of the 2021 map, or if the 2011 map had
11 allowed for greater deviation, would you have potentially
12 allowed yourself more deviation?

13 A I still think that as a matter of federal law, it's safest
14 to minimize the population deviation.

11:30:05 15 Q Okay. Did you choose to stick with the strict one person
16 one vote approach for your plans because that's what the
17 guidelines mandate?

18 A But not specifically, although it's -- it is compatible
19 certainly with the language in the guidelines.

11:30:25 20 Q Okay. Next, contiguity. I mean, you adhered fully to the
21 state's contiguity principle, correct, with the caveat, that
22 they're the stray blocks that we have -- that you discussed
23 earlier, correct?

24 A That's right. So if we're talking about the corrected
11:30:48 25 plans, I believe those to comply fully and to the letter with

1 the state's description of the contiguity guideline.

2 Q Okay. And earlier on, you had mentioned that one of the
3 first steps you took in determining whether two majority-black
4 districts could be drawn in Alabama was -- both computers, if
11:31:14 5 you will, and an algorithm to generate numerous maps; is that
6 right?

7 A That's correct.

8 Q And my limited understanding is that what is that with
9 these algorithms, you can plug in certain constraints, correct,
11:31:38 10 or certain conditions to make a map, to make it more likely
11 some types of maps will be either spit out by the algorithm,
12 and certain types of maps will not be produced by the
13 algorithm; is that fair?

14 A Yes, that's right. Our algorithmic code base allows for
11:32:00 15 both constraints in the form of thresholds and also allows you
16 to program a preference for a certain kind of district over
17 another.

18 Q Okay. So do you -- going back to one person one vote.
19 Was that one of the constraints you put in place on the front
11:32:19 20 end, say only give me maps that give me minimal deviation?

21 A To be precise, the constraint was 1 percent from ideal
22 size.

23 Q Okay. And by there being less constraining of a
24 constraint than minimal deviation, does that produce a greater
11:32:40 25 number of maps -- greater number of possible maps?

1 A There's no question. In particular, since as I mentioned
2 earlier, those runs were done at the whole precinct level, at
3 the VTD level, I believe it to be either impossible or
4 statistically nearly impossible to get one person balanced from
11:33:05 5 whole precincts on a random basis.

6 Q Okay. Is contiguity one of the constraints you plugged in
7 at the outset?

8 A Absolutely. The algorithm enforces contiguity at the VTD
9 level.

11:33:22 10 Q Right. Next in the guidelines, you noted that they call
11 for districting plans that respect communities of interest,
12 neighborhoods and political subdivisions, and you stated and --
13 I'm sorry. I will pull this up. Make sure I'm quoting you
14 accurately here. Or at least giving the correct page numbers.
11:33:52 15 This is again from your report page 53.3, you stated -- in
16 order to make seven finely population tuned districts, it's
17 necessary to split at least 6 of Alabama's 67 counties into
18 two pieces. Does that sound right?

19 A Okay. To be precise, yes. You have to split six if you
11:34:25 20 are splitting them two ways. It's possible to split fewer than
21 six if you allow for more pieces. At the extreme, you could
22 imagine just a single county split if it's got seven pie wedges
23 in it.

24 Q Got it. So there need to be at least six county splits?

11:34:44 25 A No.

1 Q Let me rephrase that.

2 A Sorry.

3 Q At least six times, a county must be split to get the
4 one person one vote minimal deviation that we're looking for,
11:34:56 5 right?

6 A I think a precise way to phrase it would be that there
7 have to be at least six additional county pieces as a way of
8 phrasing.

9 Q And that's simple math that counties rarely line up where
11:35:13 10 -- you're unlikely to have a county that's exactly 717,000
11 whatever people in it to form that one perfect district, so you
12 are going to probably have to split it at least a little to
13 equalize it, right?

14 A That's the idea, yes.

11:35:28 15 Q Okay. And I think you said earlier today that you tried
16 to take whole counties into a district whenever possible; is
17 that right?

18 A Definitely.

19 Q But you did have to break some counties. And first, I
11:35:48 20 guess to return -- like what did you mean by whenever possible?
21 You didn't just mean six counties, six county pieces, correct?

22 A Right. The way I would characterize that is that in the
23 process of drawing, particularly when you start with a blank
24 slate, you encounter decision junctures at many points in the
11:36:16 25 process. And at each of those decision junctures, I would try

1 to keep a county whole, when possible. But in the course of
2 drawing, there are many such decisions to make.

3 Q You said that you did give it a -- you said very high
4 priority for minimizing those splits, right?

11:36:37 5 A For preferring lower numbers of splits, definitely.

6 Q Okay. Briefly, I want to talk about splits in your VTDs.
7 I think you said you had sort of a priority for how you did
8 that or how you determined which VTDs and precincts? To make
9 it look cleaner in the transcript, you had a priority for which
11:37:14 10 precincts you would decide to split; is that fair?

11 A I would say it a little differently. Is that as I
12 described earlier, I split VTDs late in the process.

13 Q Uh-huh.

14 A And I described a little bit the way of deciding where to
11:37:32 15 do so.

16 Q Okay. And at least one of the things you looked at was to
17 make sure that you were still creating two districts of over
18 50 percent Black Voting Age Population, correct?

19 A Yes. That was high up on the list in my assignment.

11:37:51 20 Q Okay. Did that same consideration drive any of your
21 decisions to split counties?

22 A Do you mean of whether to split counties or where to split
23 counties?

24 Q I would say let's start first with how many counties you
11:38:17 25 split?

1 A Okay. I have four demonstrative or illustrative plans,
2 and they split different numbers of counties. If I recall
3 correctly, my plan D splits only five. And so there's a series
4 of decisions embodied differently in those different plans.

11:38:50 5 Those plans respect various kinds of decisions at those
6 junctures I referenced earlier about which priorities to
7 emphasize. So plan D splits the fewest counties, and others
8 are better by the lights of the traditional principles in the
9 guidelines in other ways.

11:39:11 10 Q Okay. Just so we're all working off the same page, I will
11 share my screen again, and hopefully this will go smoothly for
12 us.

13 So we're looking at page 5 of your report. Milligan
14 Exhibit 3. And here we see eight splits in counties for plan
11:39:54 15 A, seven for plan B, nine for plan C, and five for plan D,
16 correct?

17 A That's correct.

18 Q And for plan D, while there are five counties that are
19 ultimately divided up, do you recall the -- that's the plan
11:40:13 20 that splits Jefferson County between three different districts
21 or among three different districts?

22 A Definitely. That's how it's possible to get just five
23 counties that are split.

24 Q Okay. And now is a good time to do a broad overview of
11:40:34 25 the maps. I have sort of compiled them together in this

1 document. So I won't have to switch among so many different --

2 JUDGE MARCUS: Mr. LaCour, take your time and speak up
3 so our reporter can get it all, please.

4 MR. LACOUR: Yes, Your Honor. I apologize.

11:40:49 5 JUDGE MARCUS: That's okay. Just take your time.
6 Keep your voice up so she can get it all down.

7 MR. LACOUR: Absolutely.

8 BY MR. LACOUR:

9 Q So this document has a few excerpts from your report and a
11:41:05 10 couple of Tom Bryan's reports together just so we don't have to
11 be jumping in between. But I will identify each page for the
12 record so you know what we're looking at, and I am also happy
13 to do it a slower way and toggle between documents if you think
14 it would be preferable. But I'm hoping to be moving things
11:41:24 15 along for everyone.

16 Here, this comes from Milligan Exhibit 3, your report,
17 Dr. Duchin, page 4. Does this look like the four maps that you
18 drew for this litigation?

19 A Yes, it does.

11:41:40 20 Q Okay. Next, go to page 8 of what is actually the same
21 report. It reports the any-part Black Voting Age Population
22 for HB-1, which is the 2021 enacted map plan A, plan B, plan C,
23 plan D. Those numbers look correct to you?

24 A This does look to be an accurate copy of my report.

11:42:10 25 Q And then we have talked about splits already. Something

1 else we were looking at earlier. I think this came from page 3
2 of your report. Again, Milligan Exhibit 3. And this shows the
3 shaded colors, essentially which precincts have a little higher
4 percentage of black population within Alabama, correct?

11:42:47 5 A Yes.

6 Q Great. So the next document borrows from page 3 and puts
7 it for everyone's benefit up against a similar analysis --
8 well, I will represent to you is a similar analysis that Tom
9 Bryan prepared for the defendants from Defendants' Exhibit 2.

11:43:10 10 This is his initial report on page 40. Did you have a chance
11 to look at Mr. Bryan's report?

12 A I did.

13 Q Okay. Does this map look familiar to you?

14 A Yes. And it looks -- now that you have put them side by
11:43:26 15 side, quite similar to mine, I am happy to say.

16 Q Yeah. That's -- we're all working off of similar facts.

17 I think he is measuring black alone Voting Age Population.
18 Do you recall if your measurements were any-part black or black
19 alone?

11:43:47 20 A I believe this to be any-part black, which is the
21 population basis that I use in my reports except where
22 otherwise noted.

23 Q Okay. But generally, the maps look fairly similar in
24 distribution of black Alabamians?

11:44:06 25 A They do. And I would comfortably speculate that the

1 difference, the visible difference between black alone and
2 any-part black would be minimal in a map of this kind.

3 Q Okay. I'd like to turn to plan A then. So this is plan
4 A, which, again, comes from Milligan Exhibit 3, page 4. I also
11:44:35 5 have from Tom Bryan's supplemental report, which is Defendants'
6 Exhibit 4, Page 69, his analysis that relays the lines from
7 your plan A across the sort of race shaded precincts from the
8 map we were looking at just a moment ago.

9 Do you see that?

11:44:59 10 A I do.

11 Q And for everyone's benefit, I have added up here the
12 number of county splits and the any-part Black Voting Age
13 Population for your District 2, which I take is this tan
14 colored district in the southern part of the state and District
11:45:22 15 7, which is the light blue sort of in the central western part
16 of the state. Is that fair?

17 A Yes. That all looks reasonable.

18 Q Okay. The first -- I may have shown this a little earlier
19 this morning. But well, actually, this is a little bit of a
11:45:41 20 different question.

21 Focusing on number of splits, what -- do you recall what
22 factor led you to split two more districts than necessary in
23 this particular plan?

24 A I think you mean two more counties.

11:45:58 25 Q Yes. I apologize. Two more counties?

1 A No problem. Just trying to be clear.

2 Q Thank you.

3 A The -- every time you draw, you are balancing the
4 different priorities against each other. And so it's hard to
11:46:16 5 truly whether it was consideration of municipalities, which
6 aren't visible in this map, or whether it was physical
7 geography or some other feature. But I am testifying that the
8 choice of which counties to split was made in a balance of all
9 and only the criteria that had been discussed.

11:46:44 10 Q And one of those criteria was to ensure two black majority
11 congressional districts?

12 A That was the question that I was asked to address.

13 Q Okay. So that factor might explain why if we zoom in here
14 between -- I will call the green district, District 4. Do you
11:47:13 15 recall if -- District 5 used to be up at the top in the enacted
16 plan, and 4 beneath it.

17 Do you recall when you sort of reshuffled them if you put
18 4 off to the northwest and 5 to the northeast?

19 A I think the numbers are correct as they're reported. In
11:47:34 20 Mr. Bryan's figure, would show those to be 4 and 5.

21 Q Great. I just want to be sure.

22 So if you were to close off this county split here, you
23 could do that potentially. That would mean you would need more
24 population for the rest of District 4 because it would be
11:47:58 25 losing population District 5, correct?

1 A Are you done? Sorry.

2 Q Yes.

3 A Yes. If you took that split county and colored it all, I
4 think you were saying the pink color, magenta color, yes, you
11:48:18 5 would lose green population or population for the green
6 district and would have to gain it elsewhere in order to
7 balance.

8 Q Okay. And if you were not going to split another county
9 to gain that population, there's only one place you could
11:48:35 10 really look at more population for District 4, correct?

11 A If I'm understanding your question right, it's true that
12 the only two split counties in 4 as I have drawn it are
13 Jefferson County where your hand currently is.

14 Q Uh-huh.

11:48:55 15 A And that northern county whose name I can't currently
16 remember.

17 Q Okay. So if you had to come down to Jefferson County to
18 get more population for District 4 -- I am going to zoom in.
19 It appears that if you were going to be in population from
11:49:18 20 around here, you would losing some black population from
21 District 7, correct?

22 A There's now a fairly intricate counterfactual. But I
23 think it's responsive to your question to say that the
24 construction of District 7 definitely looks at race so as to
11:49:43 25 ensure that it's majority black.

1 Q Okay. And would it also be fair to say that the principle
2 of splitting fewer counties was subordinated to the principle
3 of getting two majority-black districts in Alabama?

4 A It's true that I regard the federal requirements of
11:50:18 5 population balance and minority electoral opportunity to be
6 nonnegotiable and, therefore, higher ranked.

7 Q Okay. You know whether you could draw a plan like plan A
8 that has only six splits in counties instead of eight and that
9 still meets that nonnegotiable criteria of two majority-black
11:50:48 10 districts?

11 A I think what makes that a difficult question to answer is
12 that it's hard to say what makes one plan like another, but I
13 would say that I made an effort here, really a strong effort to
14 balance all of the principles that we have named.

11:51:06 15 Q Okay. I just mention -- let's see. And do you know
16 roughly how many voting age are within any given district on
17 average? Would it be right to say it's about 560,000?

18 A I know it to be between 500 and 600,000 because there you
19 are taking those 700 sum and restricting to adults. So that
11:52:03 20 sounds correct.

21 Q Okay. I just want to defer decision. Let's switch
22 screens I'm sharing real quick just to show you I'm not leaving
23 you.

24 MR. NAIFEH: Your Honor, I would like to request that
11:52:22 25 that demonstrative be marked as an exhibit.

1 MR. LACOUR: No objections.

2 JUDGE MARCUS: All right. Why don't you put a number

3 on it? That would be Defense Exhibit 2 for identification, if

4 I have it right. Do I have that right, Mr. LaCour? The only

11:52:39 5 other exhibit we marked for identification was the one you used
6 for impeachment yesterday.

7 MR. LACOUR: Yes, Your Honor. I believe that is
8 correct. But if --

9 JUDGE MARCUS: That's just a number. You give me any
11:52:52 10 number you want, and we can move along.

11 MR. LACOUR: We will go with Exhibit 2.

12 JUDGE MARCUS: Defense Exhibit 2 for identification.

13 You have may proceed. Thank you.

14 BY MR. LACOUR:

11:53:06 15 Q Turning to Defense Exhibit 4. There we go. And page 25
16 on the -- so this is Tom Bryan's supplemental report. Have you
17 had a chance to review this report, Dr. Duchin?

18 A Yes. I believe so.

19 Q Okay. And he reports your plan A that -- looking at Table
11:54:00 20 3.2 that District 2 has a Voting Age Population-- an 18-plus
21 number, 560,170; is that right?

22 A It's true that that's what is written here.

23 Q Okay. We'll ask for you to assume that he has his numbers
24 right, and I'm sure if he doesn't, we will hear about it later
11:54:29 25 when he testifies.

1 And he reports 562,303 for District 7; is that correct?

2 A Yes, he does.

3 Q And we will go ahead and run through on to the next page.

4 District 2, 559,000 and some change; District 7, 762,630; for
11:55:04 5 plan C, 558,296 for District 2; and for your District 7 in plan
6 C, 562,107. To close it out, for plan 4 or plan B District 2,
7 560,550; and for plan D District 7, 562,391. Did I recount all
8 of those correctly, Dr. Duchin?

9 A I agree that that's what's written here.

11:55:42 10 Q Okay. And if those numbers are correct, then that would
11 mean that 1 percent of a district's Voting Age Population would
12 be about 5,600 people, give or take, a few dozen; is that
13 right?

14 A Yeah. That looks to be about right.

11:56:07 15 Q Okay.

16 A I should probably be careful, though. If there are any
17 precise calculations to do, I wouldn't want to have do those on
18 the spot, but would hope to have some time to sit and be
19 careful, make sure everything is done correctly.

11:56:29 20 Q Correct. I'll try to keep the math as simple as possible
21 for these purposes.

22 Returning just one more time to your plan A. Are you
23 aware of any traditional districting criteria that could
24 explain two additional county splits?

11:57:00 25 A Sure. Easily. We've heard, for instance, about

1 communities of interest, and an effort to preserve those,
2 whereas I said before, to keep municipalities whole could
3 certainly be a reason in particular in Alabama as in many
4 states, there are municipalities that cross over county lines.

11:57:24 5 Q Okay.

6 MR. LACOUR: Your Honor, as I see, it is almost the
7 lunch hour. It might be a good time to stop. I am going to
8 have a little more to go.

9 JUDGE MARCUS: Whatever works for you. Give me some
11:57:40 10 idea, Mr. LaCour, how much do you think you have on cross, and
11 we will have a sense of how many other witnesses we will get to
12 today.

13 MR. LACOUR: Your Honor --

14 JUDGE MARCUS: This is not to limit you. You take all
11:57:55 15 the time you need.

16 MR. LACOUR: Say probably another 45 minutes to an
17 hour. I hate to overpromise and under-deliver. But whichever
18 way --

19 JUDGE MARCUS: Thanks for giving me your estimate. We
11:58:10 20 are not holding you to it.

21 It's just a little before 12:00 Central Standard, 1:00
22 o'clock Eastern Standard. We'll break for one hour for lunch.
23 We'll reconvene 1:00 o'clock Central Standard, 2:00 o'clock
24 Eastern Standard. We'll ask you, Dr. Duchin, if you would be
11:58:32 25 kind enough to stick with us as we proceed into the afternoon.

1 Thank you all. And we will be in recess until 1:00 and
2 2:00 respectively.

3 (Recess.)

4 JUDGE MARCUS: Okay. Mr. LaCour, you are ready to
13:01:04 5 proceed with Dr. Duchin on your cross.

6 MR. LACOUR: And, Your Honor, thank you.

7 JUDGE MARCUS: Thank you. And you may proceed.

8 MR. LACOUR: Thank you.

9 BY MR. LACOUR:

13:01:15 10 Q Dr. Duchin, welcome back. I hope you had a nice lunch.
11 We will pick up where we left off. I am going to share my
12 screen again and start with plan B at this time. Can you see
13 that now?

14 A Yes, I can.

13:01:37 15 Q So question here: So we have got seven county splits
16 instead of the bare minimum six that would be needed if all we
17 were trying to do was equalize population; is that correct?

18 A No. As we heard, you can get under six if you're willing
19 to tolerate more pieces.

13:01:56 20 Q Splits of like -- we will stipulate when we say county
21 splits, we're referring to splits of counties. Would that be
22 the more accurate --

23 A No. So the number of split counties can -- I'm sorry. I
24 don't mean to be -- I want to be accurate. The number of split
13:02:19 25 counties can get below six, but if you are going to split them

1 only two ways, then six is the minimum.

2 Q Okay. So number of two-way county splits is one greater
3 here than would be necessary if all you were trying to do was
4 equalize population; is that fair?

13:02:39 5 A I'm sorry. Yes, that's fair.

6 Q I'd like to draw your attention, then, to District 2 in
7 the southwest corner. And I just for the record, I'm showing
8 Milligan Exhibit 3 at page 4, plan B, as well as Defendants'
9 Exhibit 4 at Page 71.

13:03:00 10 So we have got a split here between what is 2 and 7. Do
11 you recall why you didn't close this county on the west side of
12 CD 2 and maybe give up some of this county on the east side of
13 CD 2, or vice versa, close one of them? Because it appears you
14 can sort of work your way around, right, and equalize across
13:03:33 15 those four districts here, right?

16 A Let's see. I think that's Clarke County, if I remember
17 right?

18 Q I think that's right, yes.

19 A So this is one of really innumerable choices that you face
13:03:48 20 when drawing. And I think it's probably fair to say that I
21 tried this the other way, which has ripple effects in several
22 other places, and that the top of my consideration was to
23 balance the principles that we have described.

24 Q Okay. But the principle of equal population would not
13:04:11 25 require four splits among these four districts, right? It

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1 would only require three splits among these four districts?

2 A The nature of that and of all the requirements is that it
3 interacts with the others to produce the choices that you see.

4 Q Uh-huh. Could it -- I mean, tell me if I'm reading this
13:04:41 5 all correctly.

6 Generally speaking, if we were to close this off here
7 (indicating)?

8 A Uh-huh.

9 Q By expanding 2 out this way, that means we would need to
13:04:55 10 expand 7 into Jefferson County if we were going to avoid
11 splitting another county, correct?

12 A I think it's fairly complicated, but this is one of the
13 reasons that I provided multiple demonstrative maps, and you
14 can see that Clarke County is whole in District 2 in some of my
13:05:16 15 other demonstratives. So that might be a good place to look to
16 explore that counterfactual.

17 Q Okay. But generally speaking, as a map drawer, I mean, it
18 does work a bit like a puzzle, right? So if you push a little
19 here, it's going to -- if you are going -- it's like moving
13:05:35 20 population clockwise in this instance, right? That's going to
21 require population continue moving in some direction in CD 7
22 unless you're going to break into a new county, correct?

23 A Well, I can say that moving population clockwise is
24 certainly not how I was thinking about it as I was drawing.
13:05:59 25 But I take your more general point to be that a choice made in

1 one place has ripple effects in other places. And I
2 emphatically agree with that.

3 Q Okay. And so if you picked up -- if -- I guess that would
4 mean District 7 would lose some of this population here
13:06:22 5 (indicating), which is generally kind of in this area, which
6 you see some yellow and some orange and a little bit of green
7 in that area of Clarke County on the map, correct?

8 A It's hard to say, but I don't have any reason to doubt
9 you.

13:06:37 10 Q Okay. And then if you were going to -- new voters for
11 District 7 from Jefferson County -- just going to zoom in here
12 -- there's not much green left to take from around here,
13 correct?

14 A Well, you're describing a chain of reasoning that frankly
13:07:02 15 doesn't resemble my process, so it's hard for me to follow
16 along and agree or disagree in a principled way.

17 Q Okay. But if you are going to try to make some changes to
18 this map to give more weight to the minimizing of splits in the
19 counties, you were basically handed this map, that would be one
13:07:36 20 way to do it, right, if you close off Clarke here (indicating),
21 pick up some more people from Jefferson County here, then you
22 have got Shelby County here (indicating), where we could come
23 in, pick up some more people, and then you would come down to I
24 believe this is Barbour County?

13:07:54 25 A That's right.

1 Q Pick up a few more people here, get the one person one
2 vote, correct?

3 A We are deep into speculative territory that I don't feel
4 comfortable kind of commenting on, on the spot.

13:08:12 5 Q Okay. Do you see a reason why -- just purely
6 mathematically would not be possible to remove one of those
7 county splits from this four-district area if you were setting
8 aside all the other traditional districting criteria that you
9 apply?

13:08:36 10 A Oh, on the contrary, I think you could, and that's
11 reflected in my other demonstratives.

12 Q Okay. Would it be that the -- sort of the nonnegotiable
13 criteria of ensuring that two majority-Black Voting Age
14 Population districts were created explains why there are four
13:08:58 15 splits in counties in this four-district area rather than just
16 three splits in this four-district area?

17 A So at the risk of being repetitive, it's -- there's a
18 balancing of that relatively long list of criteria. And in
19 this map, there's seven splits, and the map is better in some
13:09:22 20 other ways, but I also have a demonstrative plan with as few as
21 five counties that are split.

22 Q Okay. But I think the question was -- I mean, you have
23 got four splits in the four-district area. You would only
24 really need -- mathematically, is it true there would only --
13:09:43 25 it's potentially you could get that down to only three if you

1 weren't worried about balancing the other factors?

2 A Well, I think my best and fullest answer would be that I
3 do believe other prioritizations of criteria are possible while
4 retaining two majority-black districts. And that in particular
13:10:07 5 as I think I mentioned in direct, if you kept something very
6 much like my District 2 and 7 and, therefore, 1, you have a
7 great deal of latitude with the other four districts to reorder
8 the priorities as you might see fit.

9 Q But maybe with this particular configuration of 2 and 7,
13:10:29 10 you wouldn't have latitude down to just six splits in the
11 counties; is that fair?

12 A Sorry.

13 Q I'm sorry. Go ahead.

14 A Thanks. That's not something I'm prepared to answer in a
13:10:42 15 speculative fashion looking at the map. But something I could
16 certainly sit down with mapping software and explore.

17 Q And I'll just point you here. CD 7, this was from your
18 report, and we looked at these numbers earlier. I am happy to
19 go back if you want to double check them. But I put down that
13:11:05 20 it was 50.24 percent any-part Black Voting Age Population, and
21 if I think we said that 1 percent of Voting Age Population of a
22 typical district is about 5,600 people, so we're talking less
23 than 2,000 people would be your margin for CD 7, correct? So
24 does that sound right?

13:11:32 25 A What exactly is the question? Is the question about

1 removing 2,000 people?

2 Q If you removed -- so if you removed 1,000 black people of
3 voting age from CD 7 and you replaced them with 1,000 non-black
4 people of voting age, that would bring your number down below
13:12:02 5 50 percent, correct?

6 A I don't think 1,000 would be enough from the numbers you
7 were quoting before. It sounded like maybe a few thousand
8 would, but, again, I'd want some time to sit down and get those
9 numbers just right.

13:12:16 10 Q Okay. In any event, the margins are at least -- the
11 margins are somewhat slim for CD 7, fair enough?

12 A I think that the standard is 50 percent plus one person.
13 But 50.24 is certainly less than, say, 51 percent.

14 Q Uh-huh. I will move on to plan C. Zoom out just a
13:12:52 15 little. Can you see that?

16 A I can.

17 Q Okay. And as with the other plans, the map on the left
18 comes from Milligan Exhibit 3 page 4. That's your initial
19 report. The map on the right that corresponds to it is from
13:13:11 20 Tom Bryan's supplemental report, Defendants' Exhibit 4 at page
21 73.

22 So here we've got District 2, and I think this comes from
23 page 8 of your report that shows that it is at 50.06 percent
24 Black Voting Age Population, which by my math, equates to about
13:13:40 25 350 people of voting age? Does that sound sort of in the

1 ballpark?

2 A I think you're asking is it true that .06 percent of the
3 voting age population of a district is a few hundred people?

4 Q Uh-huh.

13:13:56 5 A That sounds reasonable to me.

6 Q Okay. Great.

7 My question here -- we have nine splits in this particular
8 map. I wanted to first ask about the ones here in the
9 southwest corner of the map. What traditional districting
10 principles led you to draw that sliver through Washington and
11 Clarke counties?

12 A Well, I don't specifically recall that decision juncture,
13 but I can imagine that one possibility might have been the
14 compactness of District 7.

13:14:39 15 Q Okay. What leads you to say that, just looking at the map
16 here?

17 A Well, again, if we're looking at the Polsby-Popper
18 measure, or indeed at the Reock measure, in either of those
19 cases, the idealized shape is a circle.

13:15:04 20 Q Uh-huh.

21 A And I can see that this -- it's conceivable -- since you
22 are asking me, I think, to speculate, it's conceivable that
23 this decision was made in order to produce a somewhat rounder
24 District 7.

13:15:17 25 Q Okay. And would another way to do that be to sort of

1 borrow from that hydraulic analogy, move counterclockwise now
2 to maybe pick up some of this intrusion into Jefferson County,
3 and then in the process, make these counties whole?

4 A There are honestly innumerable choices that you face
13:15:49 5 that's really only one of many conceivable ways to balance the
6 decision in a different manner.

7 Q Okay. And so there are numerous ways you could have also
8 potentially made either of these counties whole either as part
9 of District 7 or as part of District 2, correct?

13:16:12 10 A That's correct. And I think that you will find some
11 examples in the other illustrative plans.

12 Q Okay. And you think one reason that there are nine splits
13 in counties in this plan as opposed to six splits in counties
14 is because of your -- the weight you gave to -- I apologize to
13:16:48 15 flip around there -- was because of the weight you gave to the
16 criteria of ensuring two majority-black congressional
17 districts?

18 A There's no question. And I have consistently acknowledged
19 that I took minority electoral opportunity to be a
13:17:09 20 nonnegotiable principle sought in these plans.

21 I will mention here you're also seeing in some of these
22 decisions a high priority on compactness and, of course, on
23 contiguity.

24 Q And we'll get to that in a minute.

13:17:30 25 Turning next to plan B --

1 MR. NAIFEH: Before we move on to plan B, I want to
2 make sure that all of these demonstratives are being marked.
3 So I think we had one for plan B and one for plan C.

4 JUDGE MARCUS: Did you want to mark this one B? This
13:17:54 5 is plan B?

6 MR. NAIFEH: This is D. We also saw B and C.

7 JUDGE MARCUS: So you are asking him to mark B and C
8 as well as D?

9 MR. NAIFEH: Yes, Your Honor.

13:18:05 10 JUDGE MARCUS: Any objection to doing that,
11 Mr. LaCour? Because what you are showing is not exactly the
12 exhibit as it appears in Milligan 3. Plan C, B, and A are what
13 existed, except you typed in some stuff at the top, right?

14 MR. LACOUR: Exactly. No objections, Your Honor, for
13:18:24 15 plan B.

16 JUDGE MARCUS: Why don't we do this: Why don't we
17 just mark your modifications to Duchin's plans B, C, and D as
18 Defendants' identification 3, 4, and 5? If I have the numbers
19 right, I think that works.

13:18:41 20 MR. LACOUR: Yes, that's exactly right.

21 JUDGE MARCUS: Does that work for you, counsel?

22 MR. NAIFEH: Yes, Your Honor.

23 JUDGE MARCUS: All right. So the record is clear, the
24 exhibits being shown to Dr. Duchin by Mr. LaCour are
13:18:59 25 Illustrative Plans A, B, C, and D, which have been modified to

1 typing at the top of the page, county splits, and the
2 percentage of APBVAP in each of Districts 2 and 7. Is that
3 right?

4 MR. NAIFEH: In addition, they have also added a map
13:19:19 5 from Defendants' Exhibit 4.

6 JUDGE MARCUS: That's on the other part of it. The
7 other part of the page includes a defendants' exhibit from the
8 report of the supplemental report of Mr. Bryan. With that
9 caveat, exhibits 3, 4, 5 -- would it be 3, 4, 5, and 6,
13:19:40 10 Mr. LaCour, the four of them?

11 MR. LACOUR: I believe it's 2 --

12 JUDGE MARCUS: We have already marked -- okay, so it's
13 3, 4, and 5 are marked as defendants' exhibits for
14 identification. You may proceed. Thank you.

13:19:56 15 MR. LACOUR: Great.

16 BY MR. LACOUR:

17 Q Dr. Duchin, we now come to plan D. Thank you for your
18 patience.

19 This is one that splits Jefferson County among three
13:20:10 20 different districts, correct?

21 A That's correct.

22 Q Do you recall what percentage of Jefferson County's black
23 residents ended up in your version of CD 7 and what percent
24 were placed into CDs 4 and CD 6?

13:20:30 25 A I don't think I ever calculated those percentages

1 anywhere, including in my reports, but I can tell you that
2 consideration here is to keep the core of the city of
3 Birmingham as whole as possible. It's worth pointing out that
4 the city boundaries here are especially contorted, and so it's
13:20:55 5 very difficult, as in the state's plan, to keep the city
6 completely whole. The city core it's easier to do so.

7 Q Okay. And with that caveat, I mean, does it appear here
8 -- I am zooming in a bit, and I'm sorry it's a little granary
9 -- on Tom Bryan's version of your plan D, does it appear that
13:21:24 10 race predominates in how these particular lines are drawn
11 between District 4, District 6, and District 7?

12 A Frankly, it's just really hard to tell.

13 MR. NAIFEH: Objection to the form of the question.
14 It calls for a legal conclusion.

13:21:45 15 JUDGE MARCUS: Why don't you reframe the question if
16 you could, Mr. LaCour?

17 BY MR. LACOUR:

18 Q Dr. Duchin, looking at the shapes of these lines that
19 separate District 4, District 6, and District 7, is it the race
13:22:07 20 of the population included within District 7, does it appear to
21 be a factor that was used for drawing this particular line?

22 A Okay. So it's very hard to tell just legitimately as a
23 question of the image resolution. But it looks to me that I
24 can see those green colored precincts on both sides of the
13:22:38 25 District 4, District 7 dividing line. At least, that's my best

1 effort to narrate what I am seeing in this illustration. And I
2 think you would say that if the line was drawn in some
3 predominantly race conscious way, you might expect to see that
4 green population included in District 7. But as I have
13:23:00 5 testified, I only looked at race when drawing specific boundary
6 lines to make sure that I was retaining the majority-black
7 character of the districts that I was drawing.

8 Q Okay. And have you split any precincts in Jefferson
9 County in this particular map?

13:23:22 10 A I think it's very likely practically certain, because as I
11 said before, all the population balancing was done by splitting
12 precincts in those counties that had already been split.

13 Q Okay. Do you recall the racial makeup of the parts of the
14 precincts placed in District 7 versus in another district?

13:23:46 15 A Well, I certainly don't specifically recall that and never
16 computed it. But I will continue to maintain that the race
17 consciousness of selections was only in the service of
18 retaining the majority-black character of the districts as I
19 drew.

13:24:06 20 Q Okay. Take a break from the screen sharing for just a
21 moment.

22 I would like to move on to compactness, and I am going to
23 share the screen again.

24 Going back to Milligan Exhibit 3 and -- okay. So we've
13:24:44 25 got some compactness scores here on page 6 of your report. I

1 believe we discussed some of these this morning, or you
2 discussed some of these this morning with counsel for the
3 Milligan plaintiffs; is that correct?

4 A Yes. This is the section that discusses compactness, and,
13:25:06 5 yes, we discussed it earlier today.

6 Q Okay. And then to summarize, on the average Reock score,
7 the state's plan does the best of any of the five plans here,
8 correct?

9 A That's correct.

10 Q Your plans on average do better than the Polsby-Popper
11 score -- on the Polsby-Popper test?

12 A That's correct. All four illustrative plans are more
13 compact than HB-1 on Polsby-Popper.

14 Q Okay. And then one of your four plans is more compact
13:25:47 15 under the block cut edges approach, and the other three are
16 less compact; is that correct?

17 A That's correct.

18 Q Now, these metrics also be applied on a
19 district-by-district basis, correct?

13:26:08 20 A No. Block cut edges is a plan-wide score, but the other
21 two are averaged over the districts.

22 Q Okay. And so for Polsby-Popper, for example, if a
23 district were shaped like a salamander would score lower on
24 Polsby-Popper than a district shaped like a square, right?

13:26:33 25 A Yes. And there I think you're referring to the original

1 gerrymander, which was Gary's salamander and, yes, that's part
2 of the history of compactness is the idea that reptilian
3 districts are less compact.

4 Q I thought you would get the reference.

13:26:59 5 In your view, what's the lowest Polsby-Popper score a
6 district could have and still be considered geographically
7 compact?

8 A Well, as I have actually written widely, I think
9 Polsby-Popper scores are highly context dependent. I will be
13:27:18 10 very brief. I won't -- I promise not to give a whole lecture.
11 But in particular, they're subject to what some people have
12 called the coast line penalty. And so, for instance, if you're
13 redistricting in Maryland, you can have a district that's quite
14 functionally compact with a Polsby-Popper score of 10 percent.
13:27:41 15 And so it really depends. You know, on the other hand, if you
16 are in Iowa, it's much -- there's much less reason that you
17 might draw a district that's considered reasonably compact
18 while still having a very low score.

19 Q Okay. Now, you were retained to show that two
13:28:02 20 sufficiently compact majority-black districts could be drawn in
21 Alabama, correct?

22 A Perhaps more broadly as a *Gingles I* expert.

23 Q Right. But you don't report a compactness score anywhere
24 in your three reports for any of the majority-black districts
13:28:21 25 that you drew, correct?

1 A That's true. I'm sure those numbers are in my backup
2 materials, but I didn't highlight them individually in the
3 report.

4 Q Okay. You think that district-by-district information
13:28:35 5 might be relevant for determining whether you sufficiently
6 compact districts that are majority-black could be drawn in
7 Alabama?

8 A To be clear, actually, I don't think that's the language
9 of *Gingles I*, which asks instead whether the minority
13:28:55 10 population is sufficiently compact to enable the drawing of
11 majority-minority districts.

12 Q Correct. But for the minority population to be
13 sufficiently compact, they would need to be compact within a
14 district, correct?

13:29:11 15 A I think the prevailing interpretation is that to witness
16 the sufficient compactness is to draw an entire plan that's
17 highly conformant with the traditional districting principles.
18 And so I think the overall compactness of the plan is part of
19 how that has traditionally been assessed.

13:29:36 20 Q You had a plan, however, that let's just say had seven
21 districts. Six of them were perfect circles. And the seventh
22 snaked or salamandered (sic) all around the circles, that could
23 return an average score that in theory looked decent, correct?

24 A A few observations about that hypothetical. You are, I
13:30:09 25 think, correctly observing that circles don't pack, they don't

1 fit together nicely to make a whole. And so it's certainly
2 true that if you had several circular districts you would also
3 have to fill up that negative space with something that would
4 not be very compact.

13:30:25 5 Q Uh-huh. And that seventh filler district would not be
6 compact, correct, even if it was part of an overall plan that
7 scored well on average compactness score, correct?

8 A Yes, if I am understanding you right. I think that is the
9 nature of averages that one thing can be lower, other things
10 can be higher, and then there's a balance between the low and
11 the high in the nature of an average.

12 Q So your scores -- the scores you report don't tell us
13 whether the majority-black Districts 2 and 7 that you drew
14 scored better than the District 2 and District 7 that were
13:31:12 15 enacted by the Legislature, correct?

16 A Well, I did review the district-by-district compactness
17 scores in Mr. Bryan's report. And I do agree with them to the
18 number of digits that he included. And so I can report having
19 reviewed and confirmed those numbers that the least compact
13:31:36 20 districts in my plans, which are, I think, invariably not
21 Districts 2 and 7, but Districts 2 and 1, those are always the
22 least compact districts in my plans. Those have lower
23 compactness scores than the other districts.

24 On Polsby-Popper, I am sure we can look at the exact
13:32:02 25 numbers, but from memory, I believe them to be around

1 15 percent, which I will note is comparable to or better than
2 the least compact districts in the state's enacted plan from
3 this cycle and from the last cycle, as well, where districts
4 got as low as .13.

13:32:19 5 Q You think that those district-by-district scores would be
6 relevant, however, to an overall compactness analysis at
7 *Gingles I*?

8 A Yes. I'm trying to make sure I understand. Yes.
9 Individual district scores are how you get the average. And I
13:32:41 10 think it's legitimate to look at the scores individually and
11 together, as we are now doing.

12 Q All right. We'll return to your maps probably not the
13 last time. I will be honest. But let's go again to Exhibit 3,
14 Milligan Exhibit 3, page 4.

13:33:12 15 So did you testify earlier that Districts 4 and 5 in your
16 maps were drawn to make them more compact than they had been
17 earlier? Scratch that.

18 Now, Districts 4 and 5 in each of these maps doesn't bear
19 great resemblance to Districts 4 and 5 in the 2021 map,
13:33:46 20 correct?

21 A That's true. The enacted map, in fact, has elongated
22 districts in the north of the state as I do in the south.

23 Q Nor do they bear much resemblance to the 2011 map that was
24 passed by the Legislature, correct?

13:34:02 25 A That's right. It is similar in that respect.

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1 Q Why was it important to you to restructure Districts 4 and
2 5 in your maps when neither of them were adjacent to the new
3 majority-black district you were drawing down in the south of
4 the state?

13:34:22 5 A Oh, I hope the reason is quite clear. It's because, as I
6 said, I regarded compactness to be a priority higher ranked in
7 the state guidelines and more broadly than the preservation of
8 district cores.

9 But to answer that fully, I think it's worth noting that
13:34:45 10 you can retain the majority-minority districts and make other
11 choices with those four while still keeping *Gingles I* in place.

12 Q You didn't produce a map for the Court, though, that tried
13 to do that, did you?

14 A That's right. Because of my reading, that compactness was
13:35:06 15 higher ranked.

16 Q And why -- did you say it was something in the guidelines
17 that led you to prioritize compactness over cores of districts?

18 A I did.

19 Q Can you remind me exactly what that was, or I can perhaps
13:35:32 20 pull up the guidelines, if that will be helpful?

21 A I'm happy to do it broadly, and then we can pull them up
22 if you would like to quote directly.

23 But as I showed when we reviewed the guidelines together
24 earlier, the first page discusses population equality and
13:35:51 25 minority opportunity to elect hand in hand with equal

1 protection. Immediately after that are listed compactness and
2 contiguity. Several parts lower is section J, which lists
3 several criteria, including district cores, and then it is
4 specified that within j., the priorities are unranked, which
13:36:18 5 leads me to conclude in a manner that comports with practice in
6 every other state that I've seen that the federal requirements
7 and compactness and contiguity are to be considered higher
8 ranked than district cores, and for that matter, the
9 consideration of incumbency.

13:36:38 10 Q Okay. I am going to pull up the guidelines. I just want
11 to make sure we're looking at the same thing.

12 This is Milligan Exhibit 28 and -- so I think you're
13 referring here -- starting on page 2 at line 21, was it based
14 in part on -- if I am getting you wrong, I apologize -- on this
13:37:23 15 line here saying, The following redistricting policies are
16 embedded in the political values, traditions, customs and
17 usages of the state of Alabama, and shall be observed to the
18 extent that they do not violate or subordinate the foregoing
19 policies prescribed by the constitution and laws of the United
13:37:37 20 States and of the state of Alabama?

21 A That's right. I think that it's clear both from that
22 language and from part g. on the next page. There it is. So
23 you see clearly here that it is specified that within j.,
24 there's no order of precedence to be inferred. And I think the
13:38:07 25 plain reading of that is that, in the larger structure of the

1 document, there is an order of precedence to be inferred.

2 Q Okay. Is compactness listed in j.?

3 A No. It -- indeed, this is my point. It comes before j.

4 If you flip back to the previous page, you will see that

13:38:29 5 compactness is listed up in h.

6 Q Okay. And then to go back to page 3, it says -- and to g.

7 The criteria identified in paragraphs j(i) through (vi) are not

8 listed in order of precedence, and in each instance where they

9 conflict, the Legislature shall at its discretion determine

13:38:52 10 which takes priority.

11 Do you read that to mean that if there's a conflict among

12 the j. criteria and the Legislature gets to decide, and any

13 other criteria trumps the j. criteria when there's a conflict?

14 A The ones that are listed earlier, I would say that this

13:39:16 15 indicates that the j. criteria are subordinate to the ones that

16 are listed earlier.

17 And I would add to that, that it's my understanding -- not

18 being an attorney -- it's my understanding that these

19 guidelines are not part of state law, but describe the practice

13:39:35 20 that the Legislature uses to draw lines.

21 Q Okay. Your position, looking in here at the beginning of

22 j. refers to constitution and laws of the united States and the

23 State of Alabama, your position is not that compactness is a

24 constitutional requirement, correct?

13:39:58 25 A That's correct.

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1 Q Or that compactness is required by federal law or Alabama
2 law?

3 A I can't speak to whether it's considered to be part of
4 Alabama law, not being an expert in Alabama law.

13:40:13 5 Q Fair.

6 A But I am aware that it's not considered to be federal law.

7 Q Okay. Did you look at Alabama practice, either in this
8 past redistricting cycle or past decades to see whether it
9 looked like the Legislature has been giving compactness that
10 level of priority as opposed to core retention?

11 A My principle means of learning about Alabama practice was
12 a study of the enacted plans from 2021 and from 10 years
13 earlier in 2011. And as one often does, when trying to
14 understand redistricting priorities, I did infer some
15 priorities and interpretations from the properties of those
16 plans.

17 Q And was respect for core retention one of the guiding
18 principles that you were able to infer from looking at the 2011
19 map as opposed -- or when compared to the 2021 map?

13:41:29 20 A Oh, I certainly agree that core retention seems to have
21 been highly prioritized in the creation of the 2021 plan.

22 Q Let's see. Turning now to communities of interest.

23 You referred this morning to the fact that there has not
24 been a sustained effort to map out or quantify all the
13:42:05 25 different communities of interest that might be present in the

1 state of Alabama; is that correct?

2 A Oh, I think that goes farther than my statement. I just
3 said I wasn't aware of a state effort, and that I had checked
4 the state's redistricting website to confirm that.

13:42:26 5 Q Did you look at past maps to see if you could infer from
6 them any communities of interest?

7 A Well, I think it would be quite difficult to read
8 backwards to reverse engineer, you might say, communities of
9 interest from a map, particularly since, as I said this
13:42:52 10 morning, I don't think that each district itself constitutes a
11 unitary community.

12 But I did get some ideas about splittings from the state's
13 earlier plans, and as I mentioned, from the state's current
14 board of education plan.

13:43:11 15 Q Did you get any ideas about -- the opposite of
16 splittings -- keepings together, if you will, from the past
17 maps?

18 A Did I get any ideas about areas that were kept together,
19 sure. By observation I could see some areas that hadn't been
13:43:34 20 split. I'm trying to stay with the spirit of your question.

21 Q Okay. For example, how far back did you look at past maps
22 from -- past congressional maps from Alabama?

23 A As I've testified, I focused on the last two, on the maps
24 from 2011 and 2021.

13:43:58 25 I have definitely reviewed some older maps, but that would

1 be longer ago and farther from the current process.

2 Q Okay. So you couldn't say, for example, if two gulf
3 counties, Mobile and Baldwin, have been together in the same
4 district for half a century or not?

13:44:18 5 A I couldn't. Not with a high degree of certainty. But I'm
6 willing to believe that that's true at the congressional level.
7 It's certainly the case that Mobile County is split in the
8 current State Board of Education map, and that parts of Mobile,
9 city and county, are connected to parts of the Black Belt.

13:44:45 10 Q I will have a few questions for you about a map in a
11 moment. But returning to communities of interest. You said in
12 your report that it was possible to identify several clear
13 examples of communities of interest of particular salients to
14 black Alabamians.

13:45:06 15 Am I recounting your testimony from this morning correctly
16 that the two you focused on were preserving the cores of urban
17 areas and preserving just the core of the Black Belt?

18 A I would say -- the way I described it is retaining as much
19 of the Black Belt as possible in majority-black districts.

13:45:30 20 Q Okay. Now, the Black Belt counties with the exception,
21 perhaps, of Montgomery, do not contain those large urban
22 centers that you were referring to, correct?

23 A That's right. I would say Montgomery is the clearest
24 exception.

13:45:50 25 Q Okay. So did you take into account any other communities

1 of interest?

2 A The only two kinds that I considered were the two that you
3 just cited.

4 Q Okay. And it's possible there are communities of interest
13:46:18 5 that are relevant to white and black Alabamians alike, correct?

6 A No question about that. In particular, I think urban
7 cores are relevant to black and white Alabamians alike.

8 Q Were you able to infer from looking at the 2011 and 2021
9 maps how the Legislature has applied the community of interest
13:46:43 10 factor in the past?

11 A Well, as I've said --

12 MR. NAIFEH: Asked and answered.

13 JUDGE MARCUS: I think it has been. Sustained.

14 BY MR. LACOUR:

13:46:57 15 Q You know, could community of interest consideration
16 explain why Mobile and Baldwin counties were kept together in
17 2021?

18 A Did you say could it or did it explain?

19 Q Could it?

13:47:09 20 A Could it. Certainly could.

21 Q Could a community of interest explain why the Wiregrass
22 counties were kept together in the 2021 map?

23 A It certainly could.

24 Q Okay. And similar question, could communities of interest
13:47:26 25 considerations explain why Madison and Morgan counties were

1 kept together in the 2021 --

2 MR. NAIFEH: Objection here to this line of
3 questioning. It's calling for speculation.

4 JUDGE MARCUS: Okay to answer if she can give it to
13:47:42 5 us.

6 THE WITNESS: I'm willing to concede that it could,
7 but I was unable to find any systematic description of what
8 communities were considered. I would have indeed been very
9 happy to find such a description.

13:47:53 10 BY MR. LACOUR:

11 Q Could you describe the nature of your inquiry into how
12 that guideline might have been applied? I think you said you
13 looked for anything the state had put together. Did you do
14 anything further?

13:48:09 15 A No, that's all that I did to ascertain whether there had
16 been a state publication or a state collection process.

17 Q Okay. Now, I think you said earlier it was an express
18 goal of yours to keep the Black Belt counties in majority-black
19 districts to the extent you could. Is that fair?

13:48:40 20 A Yes.

21 Q And is it fair to say that you testified this morning
22 that's part of the reason why your compactness scores for CD 1
23 and CD 2 were lower, correct?

24 A That's right. Oops. Sorry.

13:49:01 25 Q Go ahead.

1 A That's right. The elongated east to west nature of the
2 Black Belt itself is the reason that CD 2 is also elongated in
3 east to west fashion and because that's close to the south of
4 the state, that ends up prescribing elongation for District 1,
13:49:26 5 as well.

6 Q Okay. So the goal of a majority-black district or rather
7 the goal of two majority-black districts that held most of the
8 counties in the Black Belt took precedence over compactness in
9 District 2?

13:49:43 10 A No. I can't agree with that. In my understanding of what
11 by Alabamalites should be considered reasonably compact, I used
12 the state's plan as a guide where the least compact district
13 from 10 years ago had a score, a Polsby-Popper score of .13.
14 All of my districts are more compact than that. So I think I
13:50:10 15 was able to maintain reasonable compactness by Alabama
16 standards in my entire plan.

17 Q Now, none of your plans put all 18 Black Belt counties
18 into one district, correct?

19 A That's correct. Although if -- I'm sorry.

13:50:30 20 Q No. Go ahead.

21 A If I remember right, at least one plan puts all 18 Black
22 Belt counties into either District 2 or District 7.

23 Q I'm not a hundred percent certain that's correct. But we
24 can --

13:50:51 25 A I am confident --

1 Q We can turn to the maps?

2 A Sure. By memory, that's plan D.

3 Q Okay. And -- well, I've got plan D here, so... and

4 Milligan Exhibit 3, page 4. So I believe this is also a Black

13:51:22 5 Belt county, correct, where at least some of it is in

6 District 3?

7 A Indeed, that's right. And that should be Russell, I
8 think.

9 Q I believe --

13:51:32 10 A Which --

11 Q Correct.

12 A In plan C then. Russell is whole and is included in CD 2
13 as is the rest of the Black Belt included in either CD 2 or
14 CD 7.

13:51:46 15 Q Pickens in CD 3 in plan C is CD 4, correct?

16 A So that is not one of the 18 counties traditionally
17 identified with the Black Belt, although I agree with you that
18 sometimes is included on secondary lists.

19 Q Going to page 10 of your report. I think you list here
13:52:20 20 among the 18 Black Belt counties, Pickens county, correct?

21 A That's true that's listed there and not exactly sure which
22 one it is from memory in the map. But I will accept your
23 representation if you're saying that it's excluded in plan C.

24 Q Our count was that the 18 counties were split among at
13:52:53 25 least three districts in each map, but we can certainly compare

1 and contrast that later.

2 A Sure. I would be happy to do that later.

3 Q I want to get back to -- so do you recall if there was a
4 reason why all 18 counties were not placed into just two
13:53:21 5 districts instead of three?

6 A Well, again, with apologies for repetition, one is
7 balancing as a mapmaker. Quite a formidable number of
8 different priorities, and it's possible that that goal was only
9 attained in 17.5 counties, which is I think what we see in
13:53:43 10 plan B, 17.5 out of 18.

11 I would submit that that's quite a ways towards the goal
12 of securing representation in majority-black districts
13 throughout the Black Belt. And to that I would only add one
14 could certainly get all 18, but it would come at a cost to
13:54:06 15 other principles as we keep hearing.

16 Q Would it potentially come at a cost to two majority-Black
17 Voting Age Population districts?

18 A So now I think you're asking is it possible to get all 18
19 into Districts 2 and 7 in a plan where those remain
13:54:29 20 majority-black, right?

21 Q Right.

22 A I am confident that that's possible. But it would require
23 either more county splits or less compactness and more likely
24 both.

13:54:41 25 Q Okay. So if your goal was to get most of the Black Belt

1 counties both together and into majority-black districts, would
2 it be fair to say the community of interest you were trying to
3 keep together was not so much the Black Belt as it was just
4 black people more generally?

13:55:05 5 A No, I don't think so. I don't think anywhere here or ever
6 have I identified black people, full stop, as a community of
7 interest. Communities of interest, in my understanding, are
8 primarily geographical. And so that would not qualify.

9 Q Okay. I will take this down.

13:55:37 10 Okay. Do you recall from the guidelines a statement we
11 were looking at just a moment ago that says contest between
12 comments will be avoided whenever possible?

13 A That's right. If I recall, that's in that section j. that
14 we discussed.

13:56:00 15 Q Right. And you didn't address incumbents anywhere in your
16 report, did you?

17 A That's right. I did not, although I did obtain a list of
18 incumbent addresses while forming the plans. Those were not
19 part of the primary plan drawing. I did look at the number of
13:56:24 20 districts pairing incumbents at the end, although that's not
21 included in the report.

22 Q Okay. So you know whether the maps place one incumbent in
23 each district or whether they put multiple incumbents in some
24 districts?

13:56:42 25 A From memory, I think it's the case in all four of my

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1 illustrative plans that there were two districts with multiple
2 incumbents, either two incumbents or in some cases even three.

3 Q Okay. And if Tom Bryan's supplemental report indicated
4 that between four and five incumbents in two different
13:57:07 5 districts --

6 A That's consistent -- sorry.

7 JUDGE MARCUS: Let him finish the question. Was there
8 a question there, Mr. LaCour? If there was, let me hear it,
9 please.

13:57:19 10 BY MR. LACOUR:

11 Q Yeah. So if Tom Bryan's report, Defense Exhibit 4 at page
12 16 indicated that your plan places four and five incumbents in
13 districts with each other. Do you have any reason to doubt
14 that conclusion?

13:57:33 15 A No. On the contrary, I agree with that conclusion, that
16 there are either two districts with two incumbents making four
17 overall, or one with two and one with three making five
18 overall.

19 Q And you said you didn't consider incumbents at the outset
13:57:46 20 of your map drawing process?

21 A That's correct.

22 Q Did you consider them at any point in your map drawing
23 process?

24 A I did look at the end state the finalization stage to see
13:58:00 25 whether it would be possible to reduce the incumbency

1 pairing -- not to reduce incumbency itself. And I -- I
2 determined that it would be possible, for instance, to keep
3 Representative Sewell in District 7, which she has represented,
4 and I believe that my plan D does so. That was accomplished
13:58:28 5 with little cost to the other principles.

6 I also satisfied myself that it would be possible to
7 further reduce the incumbency pairing and indeed to reduce it
8 to no pairing at all if we are willing to sacrifice the
9 higher-ranked principles of compactness, and certainly
13:58:50 10 contiguity, but also if we are willing to sacrifice the county
11 integrity.

12 Q And there's a lot to be accomplished if you sacrificed
13 contiguity, correct?

14 A Yes. Although as we heard in the Massachusetts example,
13:59:04 15 not everything.

16 Q Not everything. You don't think it's possible to draw a
17 geographically -- or basically you don't think it's possible to
18 draw a map that is as compact as the maps you have produced as
19 the other criteria to the extent you've applied them also
13:59:29 20 avoids pairing incumbents and results in two majority-black
21 districts?

22 A I think what I'm comfortable saying is that to reduce
23 pairing of incumbents all the way to zero could still be
24 accomplished with two majority-black districts, I think that it
13:59:49 25 can, but at significant cost to the other principles. If I

1 could add one thing.

2 Q Please.

3 A Just to illustrate some of the tradeoffs that that
4 requires, I note in my report that two incumbents actually live
14:00:05 5 not only in the same county, but a few highway exits apart.

6 And so it's clear that to keep those incumbents in different
7 districts, of course one has to split that county. That's just
8 a small illustration that it can literally require sacrifice to
9 the other principles in order to raise the priority on
14:00:31 10 incumbent protection.

11 Q One second. I apologize.

12 Okay. Turning to back to core retention. So you looked
13 at the 2011 map and you looked at the 2021 map. Before you got
14 started drawing your own illustrative maps. And you said
14:01:12 15 earlier that it -- you could infer that core retention might
16 have been important to the 2021 Legislature. Is that fair?

17 A In fact I inferred that it was.

18 Q Okay. I think you testified earlier today that it is
19 impossible to have as high a core preservation as the 2021 map
14:01:36 20 has while having two majority-black districts; is that correct?

21 A Yes, I believe that to be a simple matter of numbers.

22 Q Okay. When you were gearing up your algorithm, did you
23 try to preserve some degree of the core of districts in drawing
24 your first few thousand maps or --

14:01:59 25 A That was -- I'm sorry.

1 Q Sorry. Go ahead.

2 A That was not a consideration.

3 Q Okay. What preservation like some of the other criteria

4 -- I mean, it could be a matter of degree. Would you agree?

14:02:18 5 A Yes, I would.

6 Q So you could try to preserve 80 percent of the cores of
7 districts or on average try to preserve 80 percent of the cores
8 of districts as one of your goals, correct?

9 A You could adopt that as a goal. That's the question?

14:02:38 10 Q Yes.

11 A Yes, you could.

12 Q And could your algorithm pull that in as constraints or as
13 a preference in producing maps?

14 A Yes, I have done that in the past in other states.

14:02:55 15 Q Okay. But not in this case, correct?

16 A I did not include that in this case.

17 Q Core retention is a traditional redistricting principle,
18 correct?

19 A Well, I would say that like incumbency consideration, it
14:03:13 20 is expressly encouraged in some states and is prohibited in
21 others as a consideration making it somewhat less traditional.

22 Q But it's not uncommon for a legislature when it sets down
23 to draw a new set of maps to start with the old set of maps,
24 correct?

14:03:35 25 A That requires me to speculate about process. Although I

1 do think it's a reasonable inference.

2 Q Okay. In any event, it was inference you made in Alabama
3 for 2021, correct?

4 A That's right.

14:03:51 5 Q So you mentioned the State Board of Education map a few
6 times today. And you said that was informative for you in
7 drawing your illustrative plans?

8 A I considered it. I wouldn't put it high up on the list of
9 considerations, but at some point in the line drawing process I
14:04:26 10 became curious just how that second majority-black district was
11 formed.

12 Q Uh-huh.

13 A And so I looked to that map to give me a sense of
14 priorities that the state had in drawing it.

14:04:43 15 Q Okay. In trying to draw a congressional map in
16 understanding the state's priorities, do you think the way the
17 state drew its 2021 congressional map would be a more
18 informative source, or the way it drew its 2021, eight-member
19 State Board of Education map?

14:05:00 20 A I treated them both as highly informative.

21 Q Okay. Do you think one would be more informative than the
22 other?

23 A That's hard to say. I mean, we are talking about a
24 congressional plan, but if the question that you're seeking to
14:05:20 25 answer is how to make a decision that is not present in the

1 congressional plan, then I think you would find the board of
2 education plan to be more informative.

3 Q Okay. Do you know when the State Board of Education map
4 in Alabama first featured a split in Mobile County?

14:05:44 5 A In other words, do I know what it looked like in 2011? Is
6 that the substance of the question?

7 Q Yes.

8 A I don't actually know that.

9 Q I am going to show you Defendants' Exhibit 26.

14:06:13 10 So this is defense Exhibit 26. I will represent to you
11 that this is the State Board of Education map that was drawn
12 after the 2000 census?

13 A Right.

14 Q Do you see here Mobile County is not divided up in this
14:06:28 15 map, correct?

16 A I thought you were just asking about the 2011 plan, but
17 this one is 20 years old, just to be clear, yes?

18 Q Yes. And I'll -- I am going to move from this to the '21
19 map and bring us all the way to the present.

14:06:45 20 A Understood.

21 Q So you see Mobile County is not split. Is that fair?

22 A That is fair.

23 Q And it's in a district with Baldwin County and I believe
24 that's Escambia?

14:06:58 25 A I accept that.

1 Q We have got District 5 that covers a great portion of the
2 Black Belt; is that correct?

3 A It is correct.

4 Q Okay. And 2011, Alabama would still have been subject to
14:07:19 5 Section 5 of the Voting Rights Act, correct?

6 A Certainly true.

7 Q Okay. So before enforcing a new State Board of Education
8 map, Alabama would need to obtain preclearance of that map
9 either from the Department of Justice or from a federal
14:07:35 10 district court in Washington, D.C., correct?

11 A Yes, that's my understanding.

12 Q And that process typically required a covered jurisdiction
13 like Alabama to prove that its new districts did not result in
14 retrogression.

14:07:52 15 MR. NAIFEH: Object here that this is calling for
16 legal conclusions.

17 JUDGE MARCUS: What is it you are trying to get her to
18 tell us, whether it amounts to retrogression as a matter of law
19 under the Voting Rights Act? If you are asking for that, that
14:08:06 20 calls for a legal conclusion and her expertise does not include
21 that.

22 MR. LACOUR: I'm asking --

23 JUDGE MARCUS: Let me finish, please. If you are
24 asking something else, Mr. LaCour, please let me know what that
14:08:17 25 would be.

1 MR. LACOUR: I was asking simply as historical matter
2 in 2011 if we wanted to -- if Alabama wanted a new map to take
3 effect, they would need to show the DOJ typically that this new
4 map would not have a retrogressive effect when compared to the
14:08:38 5 baseline old map.

6 JUDGE MARCUS: If you are asking her to tell us what
7 would have had a clear justice as a matter of retrogression.

8 MR. LACOUR: No, Your Honor, it's simply whether the
9 state --

14:08:54 10 JUDGE MARCUS: It's probably me, but I am not getting
11 the question.

12 MR. LACOUR: The question basically was to pass
13 preclearance, the state would typically need to satisfy either
14 the U.S. Department of Justice or the district court for the
14:09:11 15 District of Columbia that its new policy or its new map in this
16 instance was not retrogressive.

17 MR. NAJEEH: That is a legal question and it's also
18 outside the purview of the court.

19 JUDGE MARCUS: The objection is sustained.

14:09:30 20 BY MR. LACOUR:

21 Q You did say earlier, Dr. Duchin, though, that Section 5
22 did apply to Alabama in 2011; is that right?

23 A That's right. The Shelby County decision was in 2013 as I
24 recall.

14:09:42 25 Q I'd like to show you next Defendant's Exhibit 27.

1 This is a complaint that the state filed in the district
2 court for the District of Columbia in 2011 seeking preclearance
3 of its 2011 State Board of Education districts, as well as, I
4 believe, its congressional districts.

14:10:23 5 MR. NAIFEH: Objection. This is -- there's no
6 foundation that she's ever considered this document or for the
7 content that Mr. LaCour is describing.

8 JUDGE MARCUS: Let me ask you: Was that one of the
9 exhibits you objected to? 27?

14:10:37 10 MR. NAIFEH: We don't have an objection to the exhibit
11 coming in, but I have an objection --

12 JUDGE MARCUS: The reason I raised that --

13 MR. NAIFEH: -- characterization of the exhibit on the
14 record without asking the question.

14:10:47 15 JUDGE MARCUS: The reason I raised the question is I
16 understood that the Milligan plaintiffs objected to the 2011
17 plan, the complaint in Alabama, the holder on the grounds that
18 the documents from the litigation between the State of Alabama
19 and the DOJ were not relevant. You are not interposing that
14:11:13 20 objection?

21 MR. NAIFEH: Well, we -- I am -- I object to the
22 relevance unless he can lay a foundation for its relevance. So
23 if he wants to lay a foundation for its relevance.

24 JUDGE MARCUS: Can you tell me, Mr. LaCour, just
14:11:27 25 briefly what it is you want to do with this?

1 MR. LACOUR: So we've heard from Dr. Duchin that she
2 found it persuasive that the State Board of Education map has
3 split Mobile in order to form a second majority-minority
4 district and that that might be some evidence that the
14:11:47 5 Legislature used that as or maybe needed to preserve a
6 community of interest, or as the -- otherwise, like generally
7 fine with splitting Mobile. I think if you see the 2001 map we
8 were looking at earlier, or together, the 2011 when the census
9 was drawn -- when the census was complete, District 5 which was
14:12:17 10 heavily Black Belt lost a lot of population and then to avoid
11 retrogression, the least evidence suggests that to avoid
12 retrogression, that is why Mobile was split and added -- City
13 of Mobile was added to Section 5. And --

14 JUDGE MARCUS: Let me stop you at that point. All of
14:12:43 15 that may be true. But if we unpack it piece by piece, just ask
16 your question and see where we are going to go.

17 Just take it piece by piece if you want to get into this
18 and I can address each objection as you go along.

19 MR. LACOUR: Sure.

14:13:00 20 BY MR. LACOUR:

21 Q So, Dr. Duchin, you looked at the 2001 map with me a
22 moment ago for the State Board of Education.

23 A Yes.

24 Q And District 5 covered a large portion of the Black Belt;
14:13:14 25 is that correct?

1 A Yes.

2 Q Does it surprise you to learn between the 2000 census and
3 2010 census that district lost a great deal of population when
4 compared to other districts in the State Board of Education
14:13:32 5 map?

6 A That would not particularly surprise me to learn.

7 Q And thus, if the state were to try to maintain a
8 comparable black population within District 5, they would need
9 to go somewhere to get that population, correct?

14:13:54 10 A That's one way of putting it.

11 Q Maybe not the most eloquent way of putting it.

12 Could that explain why District 5 thus was expanded into
13 Mobile city in the 2011 map for the State Board of Education?

14 MR. NAIFEH: Object. It calls for speculation.

14:14:17 15 JUDGE MARCUS: Objection is sustained.

16 BY MR. LACOUR:

17 Q Very well.

18 JUDGE MARCUS: So you understand it, Mr. LaCour, you
19 are asking Dr. Duchin to tell us to the extent she knows why it
14:14:30 20 is that the state redrew the boundary lines the way they did
21 between '01 and '11. And I'm not sure that you have laid any
22 foundation that she has any knowledge of doing that. The
23 objection is sustained. Let's move on.

24 MR. LACOUR: Absolutely.

14:14:46 25 BY MR. LACOUR:

1 Q Okay. So we are getting close to the end, Dr. Duchin. I
2 appreciate your patience with me today.

3 Returning to something you said near the beginning. You
4 talked about how you used your -- the algorithm and algorithmic
14:15:15 5 computer system to generate a large number of maps.

6 A Yes.

7 Q And you had certain constraints put in on the front end
8 when you started generating those maps. And I believe you said
9 minimum population deviation, I think, was it plus or minus
14:15:34 10 1 percent?

11 A Yes.

12 Q And contiguity was baked in, as well, correct?

13 A Correct. The algorithm always enforces contiguity at the
14 VTD level and the population deviation threshold can be
14:15:52 15 specified by the user.

16 Q Okay. What other constraints did you program in at the
17 outset before you started generating maps?

18 A The only other constraints -- okay. So I doubt that you
19 want to hear specifics, but if you do, I'm happy to expound on
14:16:15 20 any of this, so let me know.

21 The algorithm in general has a strong preference for
22 compactness that's, as you said, baked in. It doesn't have to
23 be set by the user. The way that districts are formed, it's
24 done in a manner that generally strongly favors compactness,
14:16:34 25 particularly by the cut edges definition that I described

1 earlier.

2 The only other constraint that was added in that early
3 algorithmic -- in fact, not a constraint, but an algorithmic
4 preference, was to prefer plans in which there would be a
14:16:54 5 second majority-minority district. And I can explain how that
6 was done, if you would like to hear.

7 Q That would be great.

8 A Sure. So if you look at the BVAP in all seven districts
9 of a plan, we used what's called an objective function. In
14:17:13 10 other words, a function that sets a goal. And that function
11 credited a point to a plan with a majority-minority district
12 and then took the BVAP in the second district, second highest
13 BVAP, and added it to that. So that, for example, a plan with
14 one district at 52 percent and a second at 47 percent would get
14:17:39 15 a 1.47 score.

16 Am I making sense so far?

17 Q As much sense as you will make to me.

18 A Thanks for saying. I appreciate that.

19 So -- and then the way the algorithm is what's called a
14:17:58 20 mark-off chain, and it randomly proposes a new district
21 configuration and then flips what you can think of as a
22 weighted coin, and so the probability of acceptance was higher
23 if that score was greater. And in that way, an algorithm like
24 that can be shown -- there's -- my lab has published papers on
14:18:16 25 this topic. An algorithm like that can be shown to do a good

1 job at finding plans that are worthy of consideration in
2 *Gingles* I direction.

3 Q Okay. But you did not run the algorithm without that
4 strong preference for two majority-black districts, then, did
14:18:40 5 you?

6 A I did, in fact.

7 Q Okay. How many maps were generated when you did that?

8 A In fact, I have a publication where I do that in Alabama.
9 And in that paper, we generated 2 million districting plans for
14:18:59 10 Alabama, which I think we'll agree is quite a few. And we
11 found some with one majority-black district, but never found a
12 second with a majority-black district in 2 million attempts.
13 But, again, that's without taking race into account in any way
14 in the generation process.

14:19:19 15 Q Okay. So if you programmed into the algorithm traditional
16 districting criteria that did not include race, and you
17 generate 2 million maps, not one of them would have two
18 majority-black districts in it?

19 A Well, I have to say that I regard minority opportunity to
14:19:42 20 elect as an important traditional principle. So I don't know
21 of a way to talk about the traditional principles that is truly
22 race blind.

23 Q Would -- I think you -- would you characterize a map,
24 then, that -- assuming for a second that principle of
14:20:10 25 avoiding -- put it as minority vote dilution or creating

1 minority opportunity, how would you state the principle? I
2 want to make sure I'm stating it as you would.

3 A Minority opportunity to elect, I have called it, or
4 minority electoral opportunity.

14:20:27 5 Q Okay. So if we remove that sort of more race focused
6 minority opportunity to elect factor from the process and you
7 run your 2 million maps, if you were to get a map that had two
8 majority-minority districts that was manmade, that would
9 suggest as an extreme outlier, correct, if it was purporting to
14:21:00 10 apply the same traditional race blind districting principles?

11 A Just -- as someone who uses that term professionally quite
12 a bit, I think that's a misuse of the term.

13 Q How so?

14 A So the term extreme outlier implies a probability
14:21:21 15 distribution in which you're in the tails. If -- I don't
16 understand any way to construct a probability distribution that
17 reflects the traditional principles and is race blind. As I've
18 said, I think it's part and parcel, in fact, of the
19 nonnegotiable federal level principles. And so I don't know of
14:21:42 20 a way to talk about the traditional principles as a package
21 that is race blind.

22 Q Okay. So you offered no opinion in -- I'm sorry. Please
23 finish if --

24 A Well, I only was going to say that I don't mean to be
14:21:57 25 resisting the question. I am trying to characterize it in

1 language I am comfortable with.

2 Q Yeah. This is helpful.

3 So you don't offer any opinion, then, in this case as to
4 whether you could get -- whether it's possible to draw two
14:22:14 5 majority-minority districts in Alabama that respect traditional
6 districting criteria in a race blind way?

7 A It is certainly --

8 MR. NAIFEH: Objection. That mischaracterizes what
9 she said.

14:22:31 10 JUDGE MARCUS: Let's finish the question. Before you
11 answer, Dr. Duchin, give us a chance. I am not sure I heard
12 the entire question. The objection came in at the tail end of
13 the question. Let's ask it crisply and then we will hear the
14 objection.

14:22:48 15 MR. LACOUR: Thank you, Your Honor.

16 BY MR. LACOUR:

17 Q So Dr. Duchin, you said before that you don't really know
18 how to take into account traditional districting criteria
19 without also including that more race focused criteria of
14:23:03 20 ensuring minority representation, correct?

21 A I do know how to run algorithms that are race blind, but I
22 don't know how to think of those as answering to the
23 traditional principles. They equally -- just to illustrate, I
24 can also run algorithms that don't equalize populations and let
14:23:25 25 some districts get ten times as big as others. But then I

1 think we've departed from the traditional principles.

2 Q Okay. So you offer no opinion, then, in this case,
3 though, as to whether it's possible to draw according to all
4 traditional redistricting criteria minus that one -- the race
14:23:48 5 focus criteria of two majority-black districts in the state of
6 Alabama?

7 A That question I can certainly answer.

8 It is possible, because the world of possibility includes
9 my demonstrative maps, which could be arrived at through a
14:24:07 10 random process. So it is certainly possible.

11 Q Okay. But when you applied a random process in that study
12 you referenced earlier and you drew 2 million maps, not one of
13 them came back looking anything like one of the four
14 illustrative maps, at least when it comes to Black Voting Age
14:24:30 15 Population in two districts?

16 A Well, I can't answer whether one of them had a
17 majority-black district and a second that was 49.999, in which
18 case it could closely resemble one of the ones that I drew.
19 But I can say that my understanding is that race consciousness
14:24:51 20 is expressly permitted in order to achieve minority electoral
21 opportunity, and in particular, in order to draw majority-black
22 districts, stands to reason that one must consider race. And I
23 think the study that I referenced showing that it is hard to
24 draw two majority-black districts by accident shows the
14:25:15 25 importance of doing so on purpose.

1 Q So -- okay. Sorry. One moment, please. Are you familiar
2 with Dr. Imai -- I'm -- try to say his first name -- I know
3 I'll get it wrong. Dr. Kosuke Imai?

4 THE WITNESS: It's Kosuke and certainly his -- he and
14:25:50 5 I have talked for many years about the development -- or for
6 districting algorithms.

7 BY MR. LACOUR:

8 Q Okay. He also engages in extreme outlier analysis,
9 correct?

14:26:02 10 A He does.

11 MR. NAIFEH: I am going to object. This is outside
12 the scope of direct and outside the scope of her opinions in
13 this case.

14 JUDGE MARCUS: Are you asking her to comment on
14:26:13 15 Dr. Imai's opinion?

16 MR. LACOUR: Your Honor, she said a moment ago that
17 she would reject the --

18 JUDGE MARCUS: I'm asking you whether you are asking
19 her to comment about Dr. Imai's opinions.

14:26:23 20 MR. LACOUR: Not to question his opinions, but to see
21 if her -- his opinions might affect her opinion of what is
22 possible when it comes to drawing majority-black districts in
23 Alabama.

24 JUDGE MARCUS: You might ask if she is familiar with
14:26:44 25 his opinion in this case.

1 BY MR. LACOUR:

2 Q Dr. Duchin, you are familiar with Dr. Imai's opinions in
3 this case?

4 A Absolutely not. In fact, I only very recently learned
14:26:54 5 that he was a witness in this case at all.

6 Q Okay. Would it surprise you if I told you that he drew
7 30,000 sample maps?

8 MR. NAIFEH: Objection.

9 JUDGE MARCUS: Let him finish the question,
14:27:14 10 Mr. Naifeh. Please.

11 BY MR. LACOUR:

12 Q Would it surprise you if I told you that he ran an
13 algorithm that produced 30,000 sample congressional maps in the
14 state that adhered to certain traditional districting criteria,
14:27:31 15 including incumbency which I know your maps did not, and that
16 of the 30,000 maps, not one of them came back with two
17 majority-black districts?

18 JUDGE MARCUS: The objection is sustained.

19 MR. LACOUR: Okay. Let me just have one moment to
14:27:57 20 confer with my colleagues.

21 JUDGE MARCUS: Sure. Take your time.

22 (Mr. LaCour confers with co-counsel.)

23 BY MR. LACOUR:

24 Q Two quick final questions, and then I can let you go.
14:28:24 25 So if you were to learn that Alabama split Mobile County

1 and State Board of Education plan in order to comply with
2 Section 5 would that affect how instructive the State Board of
3 Education plan's current construction might be in how you
4 were -- design draw your second majority-black district for
14:28:48 5 Congress?

6 A I think it would not affect my feeling that it's quite
7 informative, and if I could expand on that, I would say that
8 would be the exact kind of decision juncture that would be most
9 informative for me. That is if in order to increase the black
14:29:11 10 population in the district, they found themselves with a choice
11 to make about what to split, their choice about how to do that
12 would then be helpful for me in understanding something about
13 their priorities.

14 Q Okay. Then -- all right. I think that is all I have got.
14:29:36 15 Thank you for your patience and for your time today.

16 A Thank you so much.

17 JUDGE MARCUS: All right. Thank you. You have some
18 redirect, counsel? How long would that be? Because I wanted
19 to -- we have gone about an hour and a half and I want to make
14:29:48 20 sure I give our court reporter a break.

21 MR. NAIFEH: I think now is -- we do have some
22 redirect. I think now is a good time for a break and it should
23 be very --

24 JUDGE MARCUS: Give me some reference rough sense of
14:30:00 25 timing on redirect.

1 MR. NAIFEH: I think 20 minutes.

2 JUDGE MARCUS: And then the next witness for the
3 plaintiffs will be?

4 MR. NAIFEH: Dr. Palmer for the Caster plaintiffs.

14:30:13 5 JUDGE MARCUS: All right. Thank you. We will take a
6 15-minute break. That will take you to about a quarter to 3:00
7 Central Standard Time, a quarter to 4:00 Eastern Time.

8 Thank you.

9 (Recess.)

14:45:43 10 JUDGE MARCUS: I think we are all assembled. I wanted
11 to make sure Judge Manasco, Judge Moorer, ready to proceed?

12 JUDGE MOORER: I am.

13 JUDGE MARCUS: Thank you both. Mr. LaCour,
14 Mr. Naifeh, are you ready to proceed with the balance of the
14:45:59 15 examination of Dr. Duchin?

16 MR. NAIFEH: Yes, Your Honor.

17 JUDGE MARCUS: Mr. LaCour, are you ready?

18 MR. LACOUR: Yes, Your Honor.

19 JUDGE MARCUS: You may proceed with your redirect.

14:46:09 20 REDIRECT EXAMINATION

21 BY MR. NAIFEH:

22 Q Dr. Duchin, Mr. Ang, can you bring up Milligan Exhibit 28?
23 I want to refer you back to the redistricting guidelines from
24 the reapportionment committee. Is it your understanding that
14:46:29 25 these guidelines cover the State Board of Education?

1 A Yes. That's definitely my understanding.

2 Q And I refer you to paragraph C.

3 A Thank you. That is made explicit there in paragraph C.

4 Q Okay. And do the redistricting principles prioritize
14:46:53 5 compliance with the Voting Rights Act in your understanding?

6 A Yes. I see it mentioned here on the first page. In
7 Section F.

8 Q And, in fact, that comes right after one person one vote,
9 isn't that correct?

14:47:06 10 A That's right. As I characterized it, earlier I think
11 population balance and minority opportunity to elect/equal
12 protection are the only criteria that are discussed on the
13 first page.

14 Q And Mr. Ang, can you go to the next page?

14:47:32 15 In looking at paragraph j(iii) at the bottom of the page,
16 does the redistricting guidelines distinguish what counts as a
17 community of interest for purposes of the board of education
18 plan as opposed to any other type of plan the committee right
19 be drawing?

14:47:53 20 A They do not. And my reading is that they apply verbatim
21 and with equal force to congressional plans and to the State
22 Board of Education.

23 MR. NAIFEH: Thank you, Mr. Ang. And could you next
24 pull up Caster Exhibit 1 page 19? And this is an exhibit in
14:48:19 25 the Caster case. I am happy to move it into evidence in this

1 case if the Court thinks it's necessary.

2 JUDGE MARCUS: I think it has already been received.

3 I may be mistaken about that.

4 BY MR. NAIFEH:

14:48:31 5 Q I just really want to use it as a demonstrative.

6 JUDGE MARCUS: Why don't you mark it as Plaintiffs'

7 Exhibit -- Plaintiff Milligan Exhibit 1 for identification.

8 MR. NAIFEH: And I -- thank you. Plaintiffs' --

9 marked as Plaintiffs' Exhibit 1 for purposes of identification.

14:48:50 10 And Mr. Ang, can you zoom in on the map?

11 BY MR. NAIFEH:

12 Q And this is the State Board of Education map, I believe,

13 Mr. LaCour showed you this a moment ago or a version of this.

14 In this plan is Jefferson County split?

14:49:13 15 A Yes. I can see that Jefferson County is split and if I'm

16 reading the colors correctly, it touches three districts.

17 Q Thank you, Mr. Ang.

18 MR. LACOUR: For the record, I showed a different

19 version of the map -- sorry to interject -- but I believe I

14:49:32 20 showed the 2001 version. This I believe is the 2021.

21 JUDGE MARCUS: Yes, I think that's right. Just so

22 that we're clear, this is the '21 version adopted by the state

23 Legislature for the BOE.

24 MR. NAIFEH: Yes, Your Honor, that is what this.

14:49:50 25 JUDGE MARCUS: All right.

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1 MR. NAIFEH: Apologize.

2 JUDGE MARCUS: I just want to make sure we are zeroing
3 in on the right map at the right time.

4 MR. NAIFEH: Thank you. Thank you, Mr. Ang. You can
14:50:04 5 take it down.

6 BY MR. NAIFEH:

7 Q Mr. LaCour asked you about communities of interest and
8 which ones you considered. You mentioned the Black Belt and in
9 the course of urban areas. Did you also consider counties and
14:50:21 10 municipalities to be communities of interest in some cases?

11 A Yes. It's fair to say -- well, certainly they're called
12 out as such in the guidelines. But it's fair to say that I was
13 also considering those under separate cover as the conforming
14 to political boundaries. And so in a way they get double
14:50:48 15 billing, both as communities of interest and as political
16 boundaries.

17 Q Okay. And Mr. LaCour asked you about avoiding incumbent
18 pairings and you testified that, one, that you believed it was
19 possible to create a plan with two majority-minority districts
14:51:09 20 that did not pair any incumbents, but at the cost of certain
21 other redistricting principles. Is that -- am I stating that
22 accurately?

23 A Yes, exactly.

24 Q And you could draw a plan that avoided any incumbent
14:51:23 25 pairings and still contain two majority-minority districts

1 without sacrificing the principle of contiguity, isn't that
2 right?

3 A That's correct. I should have specified.

14:51:44 4 Q Okay. And Mr. LaCour also asked you about the preserving
5 the cores of prior districts, and he specifically asked you
6 about whether an 80 percent core retention threshold could be
7 met. Are you aware of any threshold in the redistricting
8 guidelines about the extent to which cores should be preserved
9 in creating a new plan in Alabama?

14:52:03 10 A First, just to correct the record, I think I was asked
11 whether an 80 percent threshold could be sought. I don't think
12 I was asked whether it could be met, just to be perfectly
13 clear. Either way, I have seen nothing of the kind in the law
14 or in the redistricting guidelines.

14:52:21 15 Q And are you aware of any such threshold in any other as a
16 redistricting principle in any other source?

17 A No. Of the numerous states and localities that I have
18 worked in, I have never seen a prescribed percentage for core
19 retention.

14:52:39 20 Q Thank you, Dr. Duchin. And that's all of the redirect
21 that I have.

22 JUDGE MARCUS: Mr. LaCour, anything further for
23 Dr. Duchin?

24 MR. LACOUR: Yes. I will keep it very brief.

14:52:54 25 RECROSS-EXAMINATION

1 BY MR. LACOUR:

2 Q So talking about the thresholds and there's no threshold
3 number in the guidelines, correct, when it comes to core
4 retention?

14:53:05 5 A I strongly think no. We could pull it up, but I'm
6 confident that there is no --

7 Q You are correct about that, I believe, but --

8 Now, when you were talking about compactness scores and
9 where you were making sure your CDs 1 and 2 came in, you said
14:53:24 10 that you looked at some of the least compact in terms of the
11 enacted map as maybe not as a safe harbor, but at least as some
12 guide for where you were pegging your scores for CDs 1 and 2,
13 correct?

14 A I think the right way to say it would be since as I
14:53:46 15 mentioned every state has a different state geography, I did
16 look at those minimum scores in the state's plan to get an idea
17 of what might be called reasonable compactness in an Alabama
18 context.

19 Q Did you consider looking at the lowest core retention
14:54:04 20 score of any of Alabama's districts to get a sense of what
21 might reasonably be considered to be core retention?

22 A I did not because, as I said, I judged that even the
23 minimum, you know, if -- any statistic connected to core
24 retention in the state's enacted plan that I would not be able
14:54:28 25 to achieve corresponding statistics while creating a second

1 majority-black district.

2 Q Okay. And you don't know whether State Board of Education
3 plan -- let me rephrase that.

4 You don't know whether the current 2021 State Board of
14:54:46 5 Education plan's District 5 was drawn to include a community of
6 interest or rather to meet some other objective like preserving
7 the core of existing districts, do you?

8 A I think we've established and I'm happy to repeat that I
9 don't know anything directly about any of the process or
14:55:08 10 conditions under which the plan was drawn.

11 Q Okay.

12 MR. LACOUR: That's all I have got.

13 JUDGE MARCUS: All right. Thank you again. Any
14 re-redirect?

14:55:18 15 MR. NAIFEH: No, Your Honor.

16 JUDGE MARCUS: Any questions, Judge Manasco or Judge
17 Moorer?

18 JUDGE MANASCO: None from me.

19 JUDGE MOORER: None from me.

14:55:30 20 JUDGE MARCUS: All right. Thank you, Dr. Duchin. And
21 you are excused.

22 And you may proceed with your next witness. I take it
23 this will be someone that you're putting on, Ms. Khanna, for
24 Caster?

14:55:48 25 MS. KHANNA: Caster plaintiffs are putting on the next

1 witness, Dr. Palmer, and I will defer to my colleague Lali
2 Madduri for that. I think there is one -- just scheduling
3 matter we wanted to raise, Mr. Ross, with Mr. Ross on the rest
4 of the afternoon before we get there.

14:56:04 5 JUDGE MARCUS: Sure.

6 MR. ROSS: Yes, Your Honor. Sorry. Your Honor, the
7 plaintiffs -- Caster and Milligan plaintiffs would like to put
8 on Mr. Bryan after Dr. Palmer finishes with the understanding
9 that, you know, Mr. Bryan will take most of a day. We just
10 wanted to make sure that we had as much time as possible with
11 him. Dr. Liu is available tomorrow and Monday. And so we
12 just -- given the time it took to finish the -- Dr. Duchin's
13 testimony we think it's better to try to put Mr. Bryan on now.

14 JUDGE MARCUS: Okay. So you don't want to call Palmer
14:56:47 15 now, you want to give -- who is calling Bryan?

16 MR. ROSS: I'm sorry. Judge Marcus, just to be clear,
17 we would like to call Dr. Palmer now because we believe it will
18 be short, but we would like Mr. Bryan to go on afterwards.

19 JUDGE MARCUS: Does that work for the State?

14:57:05 20 MR. DAVIS: Whatever. We're ready for Dr. Liu which
21 was what was represented would go first next. We are set up
22 for that. If that's a problem for plaintiffs, we will do it --
23 I frankly think it unlikely we would finish two more experts
24 today before Mr. Bryan anyway, so yeah, that's whatever.

14:57:24 25 JUDGE MARCUS: I think what he is simply asking is he

1 wants to make sure you have enough time with Mr. Bryan.

2 MR. DAVIS: I appreciate that.

3 JUDGE MARCUS: You have got the whole day tomorrow.

4 We have set that for you.

14:57:35 5 MR. DAVIS: Yeah. Right. We are going to have enough
6 time whether Dr. Liu goes next or whether Mr. Bryan goes next.
7 I don't see the big deal, but we can change the order if we
8 need to.

9 JUDGE MARCUS: Okay. So if I have this right,
14:57:45 10 Mr. Ross, you want to put on Palmer first, finish with Palmer,
11 and then turn to Bryan. Do I have that right?

12 MR. ROSS: Yes, Your Honor.

13 JUDGE MARCUS: And Bryan would be called in
14 Mr. Davis's case in chief, rather than by you as a hostile
14:58:01 15 witness. Do I have that right?

16 MR. ROSS: Yes, Your Honor. Yes, Your Honor.

17 JUDGE MARCUS: Okay. So let's proceed with
18 Dr. Palmer. And then we will see how much time we have left,
19 Mr. Davis, to proceed accordingly.

14:58:14 20 Dr. Palmer, would you raise your right hand please.

21 MAXWELL PALMER,
22 having been first duly sworn, was examined and testified as
23 follows:

24 JUDGE MARCUS: Thank you. If you would be kind enough
14:58:27 25 to state your name for the record.

1 THE WITNESS: Maxwell Palmer.

2 JUDGE MARCUS: Thank you. And counsel, you may
3 proceed with your direct examination.

4 DIRECT EXAMINATION

14:58:40 5 BY MS. MADDURI:

6 Q Thank you, Your Honor. Good afternoon, Dr. Palmer.

7 A Good afternoon.

8 Q You've been retained as an expert for the Caster
9 plaintiffs in this case; is that correct?

14:58:51 10 A Yes.

11 Q And you have prepared one expert report?

12 A Yes.

13 Q Let's briefly pull that up. It's Plaintiffs' -- Caster
14 Plaintiffs' Exhibit 79.

14:59:07 15 Dr. Palmer, can you identify this document as your report?

16 A Yes. This is my report for this case.

17 Q Okay. And we can pull it down.

18 Do you have a copy of your report with you?

19 A I do.

14:59:20 20 Q Is your CV included in your report?

21 A Yes.

22 Q And is your CV a complete and accurate summary of your
23 background and professional experience?

24 A It is.

14:59:33 25 Q I will briefly ask you a few questions about your

1 background and expertise. Can you first summarize your
2 educational background?

3 A I received my bachelor's degree in mathematics and
4 government and legal studies from Bowdoin College in Maine, and
14:59:52 5 my Ph.D. in political science from Harvard University.

6 Q Where are you currently employed?

7 A I'm currently an associate professor of political science
8 at Boston University.

9 Q Are you tenured?

15:00:05 10 A Yes.

11 Q What classes do you teach?

12 A I teach courses on American politics and political
13 methodology, including introduction to American politics,
14 Congress, American political institutions, data science, and
15:00:22 15 formal theory.

16 Q And what are your principle areas of research?

17 A My research mostly focuses on American political
18 institutions, Congress, redistricting, and local and urban
19 politics.

15:00:37 20 Q Have you been accepted as an expert witness in cases
21 involving redistricting before?

22 A Yes.

23 Q Have you ever been rejected as an expert by any court?

24 A No.

15:00:49 25 Q Is the list of cases in which you have served as an expert

1 included in your report on pages 1 and 2?

2 A Yes.

3 Q And in approximately how many of those cases have you
4 provided a racially polarized voting analysis?

15:01:09 5 A In several of them, including *Bethune Hill vs. Virginia*,
6 *Thomas v. Bryant*, *Chestnut v. Merrill*, *Dwight v. Raffensperger*,
7 *Bruni v. Hughs*, *Texas Alliance for Retired Americans v. Hughs*.

8 I believe that's all of them.

9 Q Have courts previously credited and relied on your
15:01:30 10 analyses?

11 A Yes.

12 Q And I think you listed this case, but just to confirm.
13 Have you previously served as an expert in the state of
14 Alabama?

15:01:40 15 A Yes. In *Chestnut v. Merrill*.

16 Q Did the Court accept you as an expert in that case?

17 A Yes.

18 Q And what kind of analysis did you conduct there?

19 A I performed racially polarized voting analyses for parts
15:01:57 20 of Alabama, as well as analyzed the performance of some
21 illustrative maps in that case.

22 MS. MADDURI: Your Honor, at this time Caster
23 plaintiffs would like to proffer Dr. Palmer as an expert in
24 redistricting and data analysis.

15:02:15 25 JUDGE MARCUS: Redistricting and data analysis. Do I

1 have that right?

2 MS. MADDURI: Yes, Your Honor.

3 JUDGE MARCUS: Is there any challenge or need to voir
4 dire, Mr. Wilson?

15:02:28 5 MR. WILSON: There is not, Your Honor.

6 JUDGE MARCUS: All right. We will qualify and receive
7 Dr. Palmer as an expert in redistricting and in data analysis.
8 Thank you. You may proceed.

9 MS. MADDURI: Thank you, Your Honor.

15:02:41 10 BY MS. MADDURI:

11 Q Dr. Palmer, let's now discuss the work that you performed
12 in this case.

13 First, what were you asked to do?

14 A I was asked to offer an expert opinion on the extent to
15 which voting is racially polarized in parts of Alabama, and I
16 was also asked to analyze the performance of the
17 majority-minority districts in the plaintiffs' illustrative
18 maps.

19 Q At a high level, what did you conclude with regard to
15:03:09 20 whether there is racially polarized voting in the areas of
21 Alabama that you examined?

22 A I find very strong evidence of racially polarized voting
23 across the focus area which I defined to be the first, second,
24 third, sixth and seventh congressional districts under the
15:03:27 25 newly enacted map. I find that black and white voters

1 consistently support different candidates.

2 I also find that voting -- strong evidence of racially
3 polarized voting within each of those five individual
4 congressional districts, as well.

15:03:43 5 Q Okay. After determining that there are high levels of
6 racially polarized voting in the areas you studied, what did
7 you conclude about whether black voters' preferred candidates
8 are able to win elections in those areas?

9 A I found that black preferred candidates are generally
15:04:03 10 unable to win elections in the focus area and in four of the
11 five congressional districts.

12 Q Okay. And we'll discuss that all in detail first.

13 What did you at a high level conclude about the
14 performance of plaintiffs' demonstrative majority-minority
15:04:22 15 districts in the Caster plaintiffs' illustrative plans?

16 A I find that black preferred candidates are able to win
17 elections in both of the majority-minority districts in all the
18 maps I analyzed.

19 Q Okay. Let's begin now and start with the racially
15:04:39 20 polarized voting analysis.

21 First, what is racially polarized voting as you understand
22 it?

23 A Racially polarized voting is when voters of different
24 racial or ethnic groups prefer different candidates.

15:04:55 25 Q Is there -- is it always the case that each racial group

1 you examine has a preferred candidate?

2 A No. Sometimes a group is split between two or more
3 candidates and it is not some clear preferred candidate for
4 that group.

15:05:14 5 Q In past cases, have you conducted a racially polarized
6 voting analysis and found that there was no racially polarized
7 voting?

8 A Yes. For example, in *Bethune Hill vs. Virginia*, I looked
9 at racially polarized voting across about a dozen districts for
15:05:33 10 the House of Delegates there. And I found in some districts
11 there was racially polarized voting and in others districts
12 there was not.

13 Q Okay. At a high level, how do you go about examining
14 racially polarized voting?

15:05:45 15 A So I use an analytical approach called ecological
16 inference, which seeks to estimate the percentage of voters
17 from each racial or ethnic group that I look at that votes for
18 each candidate for each election that I study.

19 And what this ultimately yields is an estimate for each
15:06:11 20 ethnic group or racial group supporting each candidate. And
21 then I can look to see if large majorities of the members of
22 those groups are supporting the same candidate or not. For
23 example, we might find that 80 or 90 percent of the voters of a
24 group are also voting the same candidate, in which case I can
15:06:31 25 identify a candidate of choice for that group. Or you might

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1 find that that group is roughly split between two candidates,
2 say 40, 50 percent for each candidate and then there's not a
3 clear candidate of choice for that group.

4 And so I first do that for each group that I analyze and
15:06:45 5 then I look to see if the voters are -- of each group have the
6 same candidate of choice, assuming they have one or when they
7 have one, or if they have different candidates of choice. When
8 I find that each group has a candidate of choice and they are
9 different, that's evidence of racially polarized voting.

15:07:02 10 Q Okay. And I think you listed these already, but what were
11 the geographic areas of Alabama that you examined for your
12 analysis?

13 A I defined the focus area as the first, second, third
14 sixth, and seventh congressional districts under the newly
15:07:18 15 enacted map. And I analyzed that focus area as a whole and
16 each of those individual districts.

17 Q What is the reasoning behind the districts that form what
18 you refer to as the focus area?

19 A I define that set of districts as a focus area because
15:07:37 20 that was where I was told the new majority-minority districts
21 under the illustrative maps would be drawn from.

22 Q And what elections did you examine in the course of your
23 analysis?

24 A I looked at statewide general elections from 2012 through
15:07:56 25 2020, as well as the special election for U.S. Senate in 2017.

1 Q Did you also look at some elections from 2012 and 2014?

2 A Right. Yes, that's right. I looked at 2012 and 2014
3 elections, as well.

4 Q Okay. And you mentioned ecological inference as part of
15:08:17 5 your racially polarized voting analysis. If I refer to that as
6 EI, will you understand what I mean?

7 A Yes.

8 Q Okay. So what is EI?

9 A So EI is a technique to estimate voting patterns from
15:08:33 10 aggregate data. And the challenge that we have is that because
11 of the secret ballot we don't get to see how any individual
12 votes. We only get to see aggregate data, by which I mean that
13 at the individual county or precinct level we can see the total
14 votes cast for each candidate at some unit of geography and we
15:08:55 15 can also see how many voters there are in that area by race or
16 how many people live in that area by race, as well, using
17 either the voter file or different types of census data.

18 So we don't get the individual level data, just the
19 aggregate. And what ecological inference does is it's an
15:09:15 20 algorithm that tries to estimate the percentages of each group
21 supporting each candidate by looking at patterns across many
22 different counties or precincts.

23 Q Would you say that EI is the best available method for
24 assessing racially polarized voting?

15:09:32 25 A Yes. There's a few different methods. My understanding

1 is that ecological inference is the one currently preferred by
2 courts.

3 Q Okay. So it's your understanding that courts regularly
4 rely on EI analyses to determine whether there is racially
15:09:49 5 polarized voting in a particular geographic area?

6 A Yes.

7 Q Is EI also regularly used by scholars and experts to
8 examine racially polarized voting?

9 A Yes, it's widely used.

15:10:05 10 Q What kind of results does an ecological inference analysis
11 produce?

12 A The ultimate results that I present in my report are
13 estimates for each election and just to be clear, we do the
14 same ecological inference analysis separately for every
15:10:26 15 election and geography that I analyze so it's many different
16 runs of this model. And for each one, we get an estimate for
17 each group of the percent of that group voting for each
18 candidate, as well as a confidence interval, a measure of
19 uncertainty about the estimate.

15:10:45 20 Q Okay. And what are the groups that you examined here?

21 A I look at three demographic groups. Non-Hispanic black,
22 non-Hispanic white and then others, which include Hispanic,
23 Asian, Native Americans and everybody else.

24 Q Roughly what percentage of voters fall into that other
15:11:06 25 category?

1 A I think about 5 percent or a little less.

2 Q Okay. And you performed at three different racially
3 polarized voting analyses in your report, right?

4 A Yes.

15:11:18 5 Q What were they?

6 A I -- -- I looked at precinct level election data for 2016,
7 '17, '18, and '20 using precinct level election results and
8 Citizen Voting Age Population data to measure demographics from
9 the U.S. Census Bureau.

15:11:41 10 I then do a second analysis just for 2020, where I have
11 some data on voter turnout by race. And then for 2012 and 2014
12 I didn't have precinct level data available, and so I do a
13 county level analysis there, using county level election
14 results and county level data on voter registration by race
15 provided by the state.

16 Q And are the results of your three analyses consistent with
17 each other?

18 A Yes. Across every election and all three analyses I find
19 strong evidence of racially polarized voting.

15:12:17 20 Q Okay. Let's first discuss that first precinct analysis
21 that you described for 2016 to 2020.

22 Overall, what did you find for that analysis?

23 A So I find strong levels of racially polarized voting in
24 the focus area as a whole across all 12 elections from 2012 to
15:12:48 25 2020 that I look at. I find there's a clear black preferred

1 candidate in every election. I find that white voters also
2 have a clear candidate of choice, which is the opponent of the
3 black preferred candidate in each election.

4 On average I find that black voters support their
15:13:08 5 candidate of choice, about 92 percent of the vote. And that
6 white voters strongly oppose this candidate, only about
7 15 percent of white voters support the black candidate of
8 choice in each election.

9 Q Okay. Let's now turn to -- turn to your report and look
15:13:26 10 at that analysis.

11 So let's call up Caster Plaintiffs' Exhibit 79, which is
12 your report. And we will turn to Figure 3 on page 6.

13 Dr. Palmer, what is does this figure show?

14 A This figure presents the results of the racially polarized
15:13:48 15 voting analysis using counties and Citizen Voting Age
16 Population data for the focus area.

17 So each row of the figure represents a different election
18 as labeled on the left. And then there's three key pieces of
19 information to take from each election on this thing.

15:14:06 20 First, if you look at the solid blue dot on the right,
21 that represents the average -- the estimated percent of black
22 voters voting for the black preferred candidate. And we see
23 there it's relatively high, generally in the low 90 percent
24 range.

15:14:24 25 Behind each dot there's some little horizontal and

1 vertical lines and those represent the balance of the
2 confidence interval showing relatively precise estimates here.

3 Then on the left-hand side we see the open circles which
4 represent the percent of white voters voting for the black
15:14:43 5 preferred candidate, again with confidence intervals behind
6 them. We see very low levels of support for the black
7 preferred candidate, generally in the teens.

8 And so that shows us the cohesion within each group, a
9 clear black preferred candidate and then a clear white
15:15:00 10 preferred candidate in opposition to that black one. And then
11 the distance between them shows that high degree of
12 polarization.

13 Q I want to clarify one thing. I think you said that you
14 used county level data for this analysis, but I believe it's
15:15:21 15 precinct level analysis; is that right?

16 A I apologize. I have misspoke. This is all precinct-level
17 data.

18 Q Thanks.

19 And so just -- and in sum, what does Figure 3 tell us
15:15:36 20 about racially-polarized voting in these elections?

21 A It shows that voting is highly polarized between black and
22 white voters and that this pattern is consistent across every
23 election that I analyze.

24 Q Is there a part containing the precise numbers for the
15:15:52 25 election particularly within Figure 3?

1 A Yes. It's all located in Table 2 of my report.

2 Q Okay. Let's turn to Table 2, which is on page 12 of your
3 report. And we are still on Caster plaintiffs' Exhibit 79.

4 This table is entitled ecological inference results --
15:16:11 5 estimated voted share of black preferred candidates -- precinct
6 level election data with Citizens Voting Age Population --
7 focus area.

8 What does this table show?

9 A This table shows the results that I plotted that I graphed
15:16:28 10 in the figure that we just looked at. These are the numbers
11 that come out of the ecological inference analysis. And so,
12 again, each row is a separate election that I analyze, and then
13 we have three sets of numbers: first, for black voters, then
14 white voters, and then for the other category.

15:16:47 15 And within each set of numbers, you will see first a
16 percentage, and that's the estimate, the percent of that group
17 voting for the black preferred candidate. And then in
18 parenthesis after that are the upper level bounds, the range of
19 the confidence interval. So that represents the -- the
15:17:05 20 horizontal line that I plotted behind each figure we just
21 looked at.

22 So just as one example in the 2016 election for U.S.
23 President, I estimate that 90.8 percent of black voters voted
24 for the black preferred candidate with a confidence interval of
15:17:25 25 that estimate ranging from 89.5 too 92.1 percent. And then for

1 white voters in that same election, I estimate that
2 10.3 percent of white voters voted for the black preferred with
3 a confidence interval of 9.5 to 11.12 percent.

4 Q Did you run the same racially-polarized voting analysis on
15:17:45 5 a district-by-district basis?

6 A I did.

7 JUDGE MARCUS: That's our court reporter, Mr. Palmer.
8 Take your time. We want to make sure our court reporter gets
9 it all accurately, and go slowly. Thanks very much.

15:18:03 10 THE WITNESS: Thank you.

11 BY MS. MADDURI:

12 Q So what were the results of your analysis on a
13 district-by-district basis?

14 A I find the same results at the individual district level,
15:18:23 15 a strong pattern of racially-polarized voting across every
16 election in every district.

17 Q Okay. Let's turn to Figure 5 on page 8 of your report,
18 which is, again, Plaintiffs' Exhibit 79.

19 This figure is entitled racially-polarized voting
15:18:42 20 estimates by race -- congressional districts.

21 What does this figure show?

22 A This figure shows the results of my analysis in a slightly
23 different way. I don't label each individual election here
24 just because I can't fit all the labels. But each point, each
15:19:01 25 separate dot corresponds to one of the 12 estimates for each of

1 the elections that I look at.

2 The dark blue dot across the top represents the percentage
3 of black voters voting for the black preferred candidate. And
4 what this shows is that across all five congressional

15:19:17 5 districts, there's a clear black-preferred candidate in every
6 election getting well more than 80 percent of the vote in each
7 contest. And then the open circles along the bottom shows a
8 percentage of white voters voting for the black-preferred
9 candidate and showing that those levels of support are

15:19:37 10 generally very low, in some places, less than 10 percent, in
11 others, ranging into the 30 percent range. And what we see is
12 polarization in every single election across all five
13 congressional districts.

14 Q Does your report contain the precise numbers in this
15 figure?

16 A Yes. These are -- there's a separate table for each
17 congressional district. Table 4 through Table 8.

18 Q Okay. And what conclusions did you draw based on your
19 2016 to 2020 precinct analysis?

15:20:20 20 A I find strong evidence of racially-polarized voting in the
21 focus area as a whole and in each of the five congressional
22 districts.

23 Q Okay. Let's next talk about your second precinct level
24 analysis for 2020. Why did you conduct that analysis?

15:20:39 25 A I really did it as a check using a different data source

1 on my previous analysis. So the precinct level analysis I just
2 discussed used Citizen Voting Age Population data for each
3 precinct.

4 And an alternate data source would be to use the voter
15:21:04 5 file, which in Alabama includes the race of each individual
6 voter and look at the number of actual voters by race who
7 turned out to vote.

8 I did not have the full voter file available to me as of
9 the election date, but the Redistricting Data Hub, which is a
15:21:23 10 public website that publishes a lot of useful data for
11 redistricting analyses put out data on precinct level voter
12 turnout by race from L2, which is a commercial data vendor.
13 And so I was able to do a second analysis this way, and the
14 advantage here is I don't have to account for turnout. I'm
15:21:46 15 only looking at actual voter and not the whole precinct
16 population or Citizen Voting Age Population.

17 Q And what did you find based on the second analysis?

18 A I found very similar results with the exact same
19 conclusions, strong evidence of racially-polarized voting. And
15:22:08 20 just be clear, I was only able to do this for the 2020
21 elections. I didn't have that data for previous elections.
22 But in these two elections where I was able to do that
23 analysis, I find strong evidence of racially-polarized voting
24 in the focus area and in each of the five congressional
15:22:24 25 districts.

1 Q Are the exact details of that analysis contained in Table
2 9 of your report?

3 A Yes.

4 Q And at a high level to confirm, is the methodology that
15:22:42 5 you described that you used for the 2016 to 2020 precinct level
6 analysis the same methodology you used for the second 2020 only
7 analysis?

8 A Yes. I still use ecological inference. It's all still
9 set up the same way, produces the same kind of results. It's
15:23:00 10 just different data on the population within each precinct.

11 Q Let's now turn to your county level analysis. And why did
12 you do this? Why did you do this analysis?

13 A I wanted to look at a longer range of elections, but I did
14 not have precinct level data available for 2012 or 2014.

15:23:25 15 Q Okay. And you -- for the county level analysis, you
16 examined only the focus area as a whole and not each individual
17 congressional district; is that right?

18 A Yes. There aren't enough units. There aren't enough
19 counties within each congressional district alone to do that
15:23:42 20 analysis.

21 Q Okay. Let's turn to Figure 4 on page 7 of your report,
22 which is Caster Plaintiffs' Exhibit 79.

23 What does this figure show?

24 A This figure shows the results of the county level
15:24:05 25 analysis. And it's exactly like Figure 2. Each row is an

1 election. The dark blue dots on the right show the percentage
2 of black voters voting for the black-preferred candidate, and
3 the open circle on the left show the percentage of white voters
4 voting for the black-preferred candidate. One thing you can
15:24:23 5 notice here is that the confidence interval, those horizontal
6 lines behind each point are significantly wider because they
7 have much less data at the county level to work with than the
8 precinct level to work with. However, the conclusions are the
9 same. There is a clear black-preferred candidate in every
15:24:41 10 election, and white voters are strongly opposed to that
11 black-preferred candidate because there's a high level of
12 racially-polarized voting in every election here.

13 Q Okay. And just to confirm, at a high level of the
14 methodology that you previously described for the 2016 to 2020
15:25:01 15 precinct-level analysis, the same methodology that you used for
16 the county-level analysis?

17 A Yes.

18 Q And does your report contain the precise numbers that are
19 depicted in Figure 4?

15:25:18 20 A Yes. It's all in Table 3.

21 Q Okay. And to just close this county-level analysis off,
22 are the results consistent with your two precinct-level
23 analyses?

24 A They are. Across all three analyses, I find strong
15:25:39 25 evidence of racially-polarized voting.

1 Q Okay. First, we can take down the figure. Thanks.

2 After you determined that the analyzed elections
3 demonstrated the racially-polarized voting, what did you do
4 next?

15:25:57 5 A I next looked at each election within the focus area and
6 within each of the congressional districts to determine if the
7 black-preferred candidate were able to win those elections.

8 Q Is this part of the analysis commonly referred to as
9 *Gingles III*?

15:26:16 10 A Yes.

11 Q Okay. How do you conduct this part of your analysis?

12 A I look at the boundaries for the focus area for the
13 districts and look at all the precincts that fall within those
14 boundaries to identify the past election results that would
15 have occurred sort of within those boundaries, and I add up
16 those past election results. I aggregate them up to the level
17 of the district or focus area. So I am just using past
18 election results and adding up the number of votes within each
19 area.

15:26:53 20 Q Okay. Let's turn to Table 1 on page 12 of your report,
21 which is Exhibit 79. The table is entitled, Election Results
22 in the Focus Area -- Vote Share of Black-Preferred Candidates.

23 What does this table show?

24 A This shows the results of this analysis. Each number in
15:27:16 25 the table corresponds to the vote share of the black-preferred

1 candidate in each election within each of the geographies
2 listed across the top of the table. And this is of the
3 two-party vote. So the other candidate would get 100 minus
4 each of these numbers.

15:27:34 5 So, for example, in 2016, U.S. President, the
6 black-preferred candidate received 39.5 percent of the vote in
7 the focus area.

8 And then the numbers to the right show the percentage the
9 black-preferred candidate received in each of the congressional
10 districts.

11 Q Okay. And just to be clear, when you mention the vote
12 share and the focus area, these are not actual vote shares
13 statewide that the candidates received in these elections,
14 right?

15:28:02 15 A No. These are not the statewide vote shares. They're the
16 vote shares within these particular geographies.

17 Q Okay. And what did you find about whether black voters
18 were able to elect their preferred candidates in the focus area
19 as a whole?

15:28:17 20 A Black voters are generally not able to elect their
21 preferred candidates in the focus area across these 12
22 elections. The black-preferred candidate won only one.

23 Q And what election did the black voters preferred candidate
24 win?

15:28:34 25 A The 2017 special election for U.S. Senate.

1 Q And who were the candidates in that election?

2 A The black-preferred candidate was Doug Jones. And the
3 white-preferred candidate was Roy Moore.

4 Q What, if anything, do you know about Roy Moore?

15:28:51 5 A My understanding is that Roy Moore is a uniquely
6 controversial figure in Alabama politics, that he was elected
7 to the state Supreme Court, I believe twice, and then ran a
8 very controversial campaign in 2017 for U.S. Senate where he
9 was accused of sexual misconduct.

15:29:13 10 Q Okay. And did the black-preferred candidate win the 2017
11 election in all of the districts in the focus area?

12 A No. The black-preferred candidate in that election lost
13 in the First, Second, Third, and Sixth Congressional Districts.
14 And only won in the Seventh Congressional District.

15:29:36 15 Q Okay. What about for the other 11 elections? How did the
16 black-preferred candidate perform in each individual district?

17 A In the First, Second, Third, and Sixth Districts, the
18 black-preferred candidate lost all 12 elections.

19 And in the Seventh Congressional District, the
15:29:55 20 black-preferred candidate won all 12 elections.

21 Q Is it your understanding that Congressional District 7 is
22 a majority-black district?

23 A Yes.

24 Q Is it also your understanding that the other districts 1,
15:30:09 25 2, 3, and 6 in the focus area are majority-white districts?

1 A Yes.

2 Q And we can take down the figure.

3 Did you also examine which group's preferred candidate won
4 in the eight elections that you analyzed for 2012 and 2014?

15:30:31 5 A I did. Across the eight elections that I analyzed at the
6 county level, and I could only look at this for the focus area,
7 the black-preferred candidate won only once.

8 Q Okay. And what can you tell us about the election where
9 the black-preferred candidate was able to win?

15:30:50 10 A The black-preferred candidate was only able to win the
11 2012 election for Chief Justice of the Supreme Court, where the
12 white-preferred candidate was again Roy Moore.

13 Q What are your overall conclusions regarding whether
14 black-preferred candidates are able to win elections in the
15 focus area?

16 A Black-preferred candidates are largely unable to win
17 elections in the focus area with the exception of the Seventh
18 Congressional District.

19 Q Okay. Earlier we briefly discussed your testimony in
15:31:25 20 *Chestnut v. Merrill* in 2019. And I think you already confirmed
21 this, but in that case, you also examined racially-polarized
22 voting; is that right?

23 A Yes.

24 Q Okay. Did you also look at some congressional elections
15:31:39 25 in that case?

1 A I did.

2 Q Which ones?

3 A I believe I looked at the 2018 congressional elections in
4 the district, which were the old districts, you know, in use at
15:31:55 5 the time for that case.

6 Q And would that have been for Congressional Districts 1, 2,
7 and 3 that existed as they were in 2018?

8 A Yes.

9 Q What were the results of your racially-polarized voting
15:32:08 10 for those elections?

11 A I found that in those congressional elections voting was
12 highly polarized.

13 Q Okay. And were the findings largely consistent with your
14 findings here?

15:32:19 15 A Yes.

16 Q And I think you confirmed that you found that the voting
17 was racially polarized. Did you find that the black-preferred
18 candidate was defeated in the elections that you looked at?

19 A In the First, Second, and Third Districts, yes.

15:32:34 20 Q Okay. Let's just briefly pull out Plaintiffs' Exhibit 83.
21 Do you recognize this document?

22 A Yes. This is my expert report from *Chestnut v. Merrill*.

23 Q Okay. Thank you.

24 Let's now turn to your analysis of the functionality of
15:33:00 25 the majority-minority districts in six of the Caster

1 Plaintiffs' illustrative maps. What did your functionality
2 analysis examine?

3 A I looked at the two majority-minority districts, which are
4 always Districts Number 2 and Number 7 and the performance of
15:33:18 5 the black-preferred candidate in those districts under those
6 six maps.

7 Q How did you perform this analysis?

8 A I do this in the same way I do the performance analysis or
9 the ability-to-win analysis that we just discussed. I identify
15:33:33 10 the precinct that fall into each of these new districts or into
11 these illustrative districts and aggregate the election results
12 up to the district level and look at which candidate received
13 the most votes or calculate the percent of the votes received
14 by each candidate.

15:33:49 15 Q And what you are your findings about whether
16 black-preferred candidates would be able to win in Plaintiffs'
17 illustrative majority-black districts?

18 A I find that across the six maps I analyzed,
19 black-preferred candidates are able to win every election in
15:34:05 20 both the Second and Seventh Congressional District looking at
21 the same 12 elections from 2016 to 2020 that we have already
22 looked at.

23 Q Okay. Let's turn to Figure 7 of your report.

24 This is page 11 of Exhibit 79. The table is entitled
15:34:26 25 Election Results in the Focus Area Vote Shares of

1 Black-Preferred Candidates.

2 What does this figure show?

3 A This figure shows the results of that analysis. And so
4 each of the six maps is its own separate plot. Each row is a
15:34:46 5 different election. And then the blue dots here correspond to
6 the vote share of the black-preferred candidate in the Second
7 Congressional District, and the open circles correspond to the
8 vote share of the black-preferred candidate in the Seventh
9 Congressional District. And then at the 50 percent point,
15:35:03 10 there's a dark vertical line. And so the fact that each of
11 these points is to the right of that 50 percent line shows that
12 the black-preferred candidate are getting a majority of the
13 vote across every election in both the Second and Seventh
14 Congressional Districts in all six maps.

15:35:20 15 Q Do you recall on average what percentage of the votes of
16 black-preferred candidate is winning in CD 2 under plaintiffs'
17 illustrative maps?

18 A I think they -- it's an average of at least 57 percent of
19 the vote and higher in some of the maps.

15:35:44 20 Q And what's the average for the black-preferred candidate
21 in CD 7?

22 A At least 65 percent of the vote and, again, higher in some
23 of the maps.

24 Q Okay, Dr. Palmer, I would now like to briefly discuss with
15:36:04 25 you a different topic. After you submitted your report, an

1 expert for the state, Dr. Hood, submitted the report that
2 offers a few criticisms of your analysis, and I would like to
3 ask you about those now.

4 Have you reviewed Dr. Hood's report that was submitted on
15:36:21 5 December 20th?

6 A I have.

7 Q Okay. Dr. Hood notes that you relied on CVAP population
8 from the census, and states that this introduced a, quote,
9 force of potential error, end quote, into your analysis.

10 Does Dr. Hood's criticism raise any concerns for you?
15:36:38

11 A No.

12 Q Why not?

13 A Using Citizen Voting Age Population data, which is forced
14 from the American Community Survey, which is a survey conducted
15:36:54 15 by the U.S. Census Bureau every year, is very common practice
16 in this field. It's widely used by political scientists, in
17 peer-reviewed published academic work, as well as by expert
18 witnesses. And this is reliable high-quality data.

19 Q Does Dr. Hood conduct any analyses using that same data?

15:37:26 20 A I don't recall, and I don't have his report in front of
21 me.

22 Q Okay. That's fine.

23 Is there any reason to believe that there are systemic
24 errors in the CVAP data that you used that could bias your
15:37:39 25 analysis in any way?

1 A No.

2 Q Dr. Hood also criticized your use of data from the

3 Redistricting Data Hub. Specifically, he expresses concerns

4 that the Redistricting Data Hub was, quote, not able to

15:37:55 5 replicate joining election data and precinct boundaries because

6 they did not have precinct boundary data for every election.

7 Does this criticism raise any concerns for you about your

8 analysis?

9 A No.

15:38:07 10 Q Why not?

11 A So this data, the precinct level data I rely on, I

12 downloaded from the Redistricting Data Hub. And as I

13 mentioned, this is just a public website that aggregates many

14 different sources, or collects and publishes many different

15:38:28 15 sources of relevant redistricting data.

16 But the actual data that they're using here in which I

17 talk about in my report is assembled by a group called the

18 Voting and Election Science Team, or VEST, which is a group of

19 academics I think based at the University of Florida who do the

15:38:47 20 really hard and difficult work of assembling precinct-level

21 data, matching up shapefiles the geographic boundaries of each

22 precinct with election results. And this is a really time

23 consuming and difficult task. And one of the many things they

24 do is they go to individual states or individual counties and

15:39:08 25 request maps of the precincts that they actually can absolutely

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1 get the precinct boundaries. And this is challenging and very
2 time consuming.

3 And so their data is widely used by academics in
4 peer-reviewed published work, and it's highly reliable.

15:39:25 5 And what the Redistricting Data Hub does and what Dr. Hood
6 comments on is they just look at the data and produce a
7 validation report that says, could we independently on our own
8 reproduce these same numbers? And the answer here is no,
9 because Redistricting Data Hub doesn't have the same
15:39:42 10 shapefiles, those same files that the VEST group got from each
11 county to reproduce that work. They note that in their own
12 validation report. They say in that same report that Dr. Hood
13 cites that this is to be expected, given the way that the data
14 was assembled.

15:39:58 15 So the Redistricting Data Hub team doesn't have any
16 concerns about this data, and I don't have any concerns about
17 this data.

18 Q Can you briefly explain the difference between a VTD and a
19 precinct and how that data is merged, which is what I believe
15:40:15 20 you were explaining the VEST team did?

21 A The VEST team is actually doing something one step
22 earlier. They are collecting precinct boundaries from states
23 and counties and merging that with precinct-level election
24 results produced by individual states and counties after each
15:40:34 25 election.

1 And that in itself can be very difficult because the names
2 of the precincts or the way they're identified in the systems
3 that tabulate those are the ways they're reported don't always
4 match up cleanly with the shapefiles that are available.

15:40:49 5 For example, the state might report a precinct name, but
6 the county may provide a shapefile with ID numbers for each
7 precinct instead. And this is a challenge that I had to handle
8 in Alabama in 20 -- in 2019 in *Chestnut vs. Merrill*, where I
9 assembled some precinct-level data from Alabama precincts and
15:41:09 10 election results myself.

11 So that's a different challenge.

12 To answer the other part of your questions, voting
13 tabulation districts are the census equivalent, the U.S. Census
14 equivalent of precinct boundaries. And they're based on data
15:41:26 15 provided to the Census Bureau from each state. And because
16 precincts change over time, voting tabulation districts or VTDs
17 are often a good unit of analysis for redistricting work,
18 because we can look at the election data or demographics over
19 time, looking at a constant geographic unit instead of looking
15:41:47 20 at precincts which might vary in number or location and shape
21 over time within each county or state.

22 Q Okay. I think Dr. Hood's next criticism is related to
23 what you just described.

24 So he suggests that there may be mismatches between
15:42:04 25 VTD-shaped files on Redistricting Data Hub and the actual

1 precinct boundaries for Alabama counties.

2 He specifically points to Washington County as such an
3 error. Does Dr. Hood's criticism give you any cause for
4 concern?

15:42:18 5 A No. I think this stems from sort of the interchangeable
6 use of the term precinct and VTD in my report. So in my
7 report, I discuss precinct-level analyses. But as I note in --
8 on page 3, the data I'm using -- or actually Voting Tabulation
9 District-level data, where the VEST team has taken precinct
15:42:45 10 level data and reallocated it to match the new geographies that
11 correspond to U.S. Census, reaggregate it to voting tabulations
12 district boundaries instead. And so Dr. Hood has in his report
13 two maps: One of VTD and one of precincts. And the source
14 data from the VEST team, the precinct-level data they provide
15:43:09 15 looks exactly like Dr. Hood's maps. Those maps are identical.
16 And then using very standard algorithms and approaches for
17 aggregating data from one geography to another, they then
18 transform that data to Voting Tabulation District data and
19 publish that, as well. So I have both versions of that data.
15:43:30 20 I'm using Voting Tabulation District for simplicity.

21 And for 2017, where that Voting Tabulation District data
22 was not provided by the Redistricting Data Hub, I assembled
23 that in the same way myself using the exact same code and
24 process that the Redistricting Data Hub used.

15:43:46 25 Q Finally, Dr. Hood also criticizes your use of data derived

1 from a commercial vendor that I think you mentioned called L2.
2 Specifically, he suggests that L2's data contains discrepancies
3 that, quote, could make a difference in a district
4 functionality analysis, end quote. Does Dr. Hood's speculation
15:44:13 5 give you any cause for concern?

6 A No.

7 Q Why not?

8 A Because I don't use this data at all in any functionality
9 analysis that I do. My functionality analysis relies entirely
15:44:25 10 on past election results.

11 Q Do any of the criticisms that Dr. Hood makes of your
12 report cause you to doubt or change any of your conclusions?

13 A No.

14 Q Did Dr. Hood also perform a racially-polarized voting
15:44:41 15 analysis?

16 A Yes.

17 Q What methodology did Dr. Hood use as you understand it?

18 A Dr. Hood also uses ecological inference.

19 Q And what geographic areas did Dr. Hood examine?

15:44:56 20 A I know he did this for the Seventh Congressional District
21 and I believe for some others, as well, but I am not positive.

22 Q Okay. Where the geographic areas examined overlap between
23 your analysis and Dr. Hood's analysis, how did Dr. Hood's
24 results compare with yours?

15:45:17 25 A So for the Seventh Congressional District where Dr. Hood

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1 does ecological inference using 2020 presidential election
2 results and 2018 gubernatorial election results, we find the
3 same conclusions. He also finds strong evidence of
4 racially-polarized voting in that district.

15:45:38 5 Q Okay.

6 MS. MADDURI: Thank you, Dr. Palmer. Those are all
7 the questions that I have for you at this time. I will pass
8 the witness to Mr. Wilson.

9 JUDGE MARCUS: Thank you very much.

15:45:53 10 Before we start, Mr. Wilson with your cross, I just want
11 to ask if our reporter's doing okay.

12 Mr. Wilson, fire away.

13 MR. WILSON: Thank you, Judge Marcus. And I apologize
14 for the confusion. Can I actually ask for a very quick break
15 right now?

16 JUDGE MARCUS: You sure can. You sure can. We will
17 take -- how much time do you need? You tell me.

18 MR. WILSON: Shouldn't be more than five minutes or
19 so.

15:46:37 20 JUDGE MARCUS: Let's take a ten-minute break at this
21 point, and we will reconvene with your cross. Quick question:
22 What's your timing on the cross because we're somewhere --
23 they're debating whether Mr. Bryan will come next or whether
24 their other expert on *Gingles II* and *III* will come next.

15:46:58 25 MR. WILSON: Understood, Your Honor. It's a little

1 bit.

2 JUDGE MARCUS: Let me just preface it by saying,
3 again, you take all the time you need to do your cross.

4 MR. WILSON: Thank you, Your Honor. There are some
15:47:10 5 questions that we have that remain about the analysis itself,
6 and that could take a little longer, even though Ms. Madduri
7 did ask a few questions about the analysis, too, so it's
8 difficult to speculate, but I would think hopefully under
9 45 minutes.

15:47:36 10 JUDGE MARCUS: Let's just -- we will play it by ear.
11 You take your time. We will take a ten-minute break at this
12 point. Thanks.

13 (Recess.)

14 JUDGE MARCUS: Judge Moorer, are we ready to begin?

15:56:47 15 JUDGE MOORER: Yes, sir, we are.

16 JUDGE MARCUS: Thanks so much. Mr. Wilson, you may
17 continue with your cross of Dr. Palmer.

18 CROSS-EXAMINATION

19 BY MR. WILSON:

15:56:57 20 Q Dr. Palmer, how are you?

21 A Good. Thank you.

22 Q Good. Glad to hear it.

23 So now, Dr. Palmer, because we didn't have a chance to do
24 a deposition in this litigation, some of the methodological
15:57:12 25 questions that I ask might be very basic, and it's just stuff

1 that I'm unfamiliar with. So apologies in advance if I missed
2 an obvious explanation.

3 But I am going to try to understand your report. Is that
4 fair?

15:57:25 5 A Yes.

6 Q And you still have your report in front of you?

7 A I do.

8 Q Thank you. So I will probably refer to that fairly
9 frequently if you wouldn't mind keeping it handy.

15:57:40 10 Now, Dr. Palmer, you have conducted racial-polarization
11 analysis in Voting Rights Act litigation before; is that
12 correct?

13 A Yes.

14 Q And can you explain when you generally find that
15:57:53 15 racially-polarized voting has occurred?

16 A Can you be more specific?

17 Q Sure. Under what conditions do you find
18 racially-polarized voting occurs when you're analyzing
19 different populations or minority groups?

15:58:12 20 A It entirely depends on the groups I'm looking at and the
21 dynamics of the elections in those places.

22 Q Okay. I think I might be asking a more basic question. I
23 apologize.

24 Is it fair to say that racially-polarized voting occurs
15:58:30 25 when, say, black voters and white voters support different

1 candidates?

2 A Yes.

3 Q Okay. And is it fair to say, then, your analysis is
4 looking at results?

15:58:43 5 A Election results? Yes.

6 Q Yeah. Yes. Thank you.

7 So, in other words, your analysis is not examining why
8 voters are voting the way that they're voting; is that right?

9 A That's correct. I do not look at why voters make the
15:59:02 10 choices they do, just the choices that they are making.

11 Q Thank you, Dr. Palmer.

12 And how do you determine whether a racial group supports a
13 particular candidate?

14 A So first I run the ecological inference algorithm, and I
15:59:22 15 look at the results. And if a large majority of that group is
16 supporting the same candidate, then I would say that's the
17 group's candidate of choice.

18 Q And, Dr. Palmer, when you say a large majority, what do
19 you mean?

15:59:41 20 A So there's not an exact cutoff, but generally I think of
21 it as, you know, well above 50 percent, and often I look at the
22 confidence interval and would like to see a confidence interval
23 that's also above -- or well below 50 percent, either way, far
24 away from 50 percent. So, for example, if I were to estimate
16:00:03 25 that a group supported a candidate, let's say, 60 percent of

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1 the vote, but with a big confidence interval say going down to
2 45 percent, I would not have confidence that that group had a
3 candidate of choice.

4 Q Understood. And so when you say well above 50 percent, is
16:00:22 5 that 55 percent?

6 A Generally higher, but I don't have an exact cutoff.

7 Q Do you know whether any experts in your field have exact
8 cutoffs for what they consider to be a significant majority
9 such that it produces a candidate of choice among a racial
16:00:46 10 group?

11 A I don't know.

12 Q And have you observed any consistent numbers in your own
13 past practice or litigation you've been involved in of when you
14 generally find that a significant majority prefers a candidate
16:01:09 15 such that it is their candidate of choice?

16 A Typically, I find one of two results for the most part.

17 Q Uh-huh.

18 A Either there's a relatively high vote share, for a
19 group -- a certain candidate, say 70 percent range or higher.

16:01:35 20 Q Okay.

21 A And so I don't have to worry about sort of that fine line,
22 or that group's sort of towards the middle and split. And
23 often when a group is split, there's going to be a relatively
24 large competent table. We are going to be more uncertain about
16:01:49 25 that group's voting behavior.

1 So those are sort of the more typical results that I find.

2 Q Got it. Thank you, Dr. Palmer.

3 So there really is no bright line for racially-polarized
4 voting that you are aware of?

16:02:02 5 A That's right.

6 Q Okay. And for your racial polarization analysis in this
7 case, you analyzed 12 elections; is that right?

8 A I look at 12 elections at the precinct level and an
9 additional eight elections at the county level.

16:02:22 10 Q Okay. And did your report contain information about any
11 congressional elections?

12 A No. There have been no congressional elections under
13 these enacted maps.

14 Q Uh-huh. And all of these elections that you analyzed are
16:02:41 15 statewide elections, right?

16 A Yes.

17 Q So am I correct that when you used in the racial
18 polarization context the term, endogenous election, refers to
19 elections for the particular office at issue?

16:02:59 20 A Yes.

21 Q And your report does not contain any endogenous elections,
22 right?

23 A There have been no endogenous elections held under these
24 under these new districts, but as I talked about earlier, I did
16:03:15 25 examine endogenous elections under the old map for 2018 in

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1 *Chestnut v. Merrill* and found the exact same pattern.

2 Q Okay. And under the old map, you could have looked at
3 congressional elections, and you did in *Chestnut v. Merrill*,
4 then, right?

16:03:32 5 A Yes.

6 Q Okay. And do you think that analysis would be relevant to
7 what you are testifying about today?

8 A It's relevant in that I find the same consistent pattern.

9 Q Uh-huh.

16:03:46 10 A But simply endogenous elections at these geographies are
11 not available.

12 Q Right. But they're available for geographies that look
13 similar to these geographies; is that right?

14 A I don't have the old and new maps in front of me to sort
16:04:01 15 of compare the changes.

16 Q Okay. Fair enough.

17 Did you discuss any primary elections in your report?

18 A No.

19 Q Did you analyze any primary elections when conducting any
16:04:17 20 research for your report, so, analyze primary elections that
21 may not have made it into the final cut?

22 A No.

23 Q Are you aware of any racial polarization expert reports
24 offered for the purposes of litigation that have included
16:04:35 25 information about primary elections?

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1 A Yes.

2 Q Can you think of any reasons why racial polarization
3 experts might prefer to look at primary elections rather than
4 general elections?

16:04:49 5 A I prefer to look at general elections.

6 Q I apologize if my question wasn't clear. Can you think of
7 any reasons why racial polarization experts might prefer to
8 look at primary elections rather than general elections?

9 A I don't know.

16:05:09 10 Q Do you think that primary elections could have advantages
11 over general elections for the purposes of racial polarization
12 analysis insofar as primary elections could more effectively
13 hold partisanship constant?

14 A I disagree that that would be an advantage.

16:05:33 15 Q Do you think that looking at primary elections for the
16 purposes of racial polarization analysis could more effectively
17 try to hold partisanship constant?

18 A I think -- I don't think so. I think that general
19 elections where the most -- the largest number of voters and
16:05:58 20 much larger number of voters participate give us a better
21 measure of racial polarized voting.

22 Q Okay. Maybe my question is a little bit unclear. What
23 I'm trying to tease out, and I'm sure I am not doing a good job
24 is, you know, when I think about a general election, I think
16:06:16 25 one confounding variable about why voters vote the way that

1 they do could be partisanship as opposed to race. Is that
2 fair?

3 A I disagree that it's a confounding variable. Whereas we
4 talked about earlier, we're not trying to understand why voters
16:06:37 5 vote the way they do.

6 Q Uh-huh.

7 A We're trying to look at how they vote. And racial
8 polarized voting doesn't require understanding why. It only
9 requires understanding how they vote and the choices that
16:06:51 10 voters make.

11 Q Fair enough, Dr. Palmer.

12 So if someone were interested in trying to figure out why
13 voters vote the way that they do, do you think that there could
14 be an advantage to analyzing primary elections insofar as those
16:07:07 15 primary elections might hold partisanship more constant than
16 general elections?

17 A Can you repeat the question?

18 Q Sure. So insofar as someone was trying to figure out why
19 voters vote the way that they do, do you think that there could
16:07:26 20 be an advantage in looking at primary elections rather than
21 general elections because primary elections could hold
22 partisanship more constant?

23 MS. MADDURI: Objection. Calls for speculation, and
24 it's beyond the scope of Dr. Palmer's report.

16:07:44 25 JUDGE MARCUS: If you can answer the question, I will

1 allow it. You may proceed, Dr. Palmer, with your answer.

2 Overruled.

3 THE WITNESS: I think you're asking a research
4 question about if primaries have that advantage. I don't know
16:07:58 5 the answer to that question.

6 BY MR. WILSON:

7 Q Are you aware of any racial polarization experts who have
8 concluded the primary elections would have that advantage over
9 general elections?

16:08:13 10 A I don't know.

11 Q Fair enough.

12 Now, Dr. Palmer, I would like to ask you a little bit
13 about the data sources that you used.

14 Could we turn to page 2 of your report, please? And if
16:08:30 15 it's easier -- it looks like you have it in front of you. But
16 if you would like, I can put it up on the screen. Just let me
17 know.

18 On page 2 of your report, you have a section called data
19 sources and elections analyzed, right?

16:08:46 20 A Yes.

21 Q And in this section, you explain where you got the data
22 that you used for racial polarization analysis, right?

23 A Yes.

24 Q And you write in paragraph 11, I analyzed
16:09:03 25 racially-polarized voting using two different data sources,

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1 correct?

2 A That's correct. But I believe that should be three when
3 you include the county level data, as well.

4 Q Thank you. You are well ahead of me, Dr. Palmer. I was
16:09:16 5 going to ask about that for my own edification.

6 So the first bullet point, you described the sources that
7 you used to determine precinct level election results and data
8 on Citizen Voting Age Population or CVAP by race for the 2016,
9 2018, and 2020 general elections, and the 2017 special election
16:09:38 10 for Senate, right?

11 A Yes.

12 Q And as you describe it, in the first bucket, you used
13 data, quote, assembled by the voting and election science team,
14 right?

16:09:49 15 A Yes.

16 Q And I think Ms. Madduri may have asked you about the
17 voting and election science team. But can you tell me just one
18 more time who they are or what that group is?

19 A It's a group of academics at least partially based at the
16:10:08 20 University of Florida who do the really hard and time-consuming
21 work of matching up precinct shapefiles to election results.

22 Q Thank you, Dr. Palmer.

23 And so does the Secretary of State provide the voter
24 registration and voter history data that the VEST uses?

16:10:28 25 A I don't believe that they use that data. They use the

1 election results, the actual counts of the number of votes cast
2 for each candidate, which is from the Secretary of State.

3 Q Okay. Okay.

4 Got it. And what specific data then did the voting and
16:10:51 5 election science team assemble?

6 A They take the election results, which are lists for every
7 precinct of every election and the number of votes received by
8 each candidate, and then they match those results to geographic
9 data, to a shapefile, which is a map --

16:11:11 10 Q Uh-huh.

11 A -- of the precincts at the time of the election. And this
12 is -- this sounds like something that should be easy, but in
13 practice in many states, it's not because the counties that
14 might administer the precinct boundaries might identify
16:11:33 15 something differently than the state system for reporting
16 election results.

17 Q I have no doubt that that's difficult.

18 Is that a task that you have ever undertaken yourself?

19 A Yes, many times. Including in *Chestnut v. Merrill* in
16:11:49 20 2019, I sought to do this for Alabama, and I was provided
21 shapefiles for I believe most, if not all, the counties in the
22 focus area that I used at the time, which was a different focus
23 area in that case, and voter files which identified by
24 precincts and election results, and I had significant
16:12:13 25 challenges matching up that data such there were some counties

1 I could not include in my analysis even with additional data
2 and requests from the state at the time. And that's all
3 documented in that report.

4 Q And so why did you not repeat that process in this case?

16:12:32 5 A I knew from past experience that it's a very -- very
6 time-consuming task. And the VEST data was not -- I do not
7 belief was available at the time of my previous report, but was
8 now available. So if somebody else had already completed this,
9 you know, very difficult time-consuming task, I can rely on
16:12:54 10 their data set.

11 Q Fair enough. Thank you. And next you described the data
12 as having been, quote, updated to use 2020 VTDs and distributed
13 on the Redistricting Data Hub, right?

14 A Yes.

16:13:06 15 Q I'm sure this is a very basic question, but what does it
16 mean to update the Secretary of State's data to use 2020 VTDs?

17 A So it's updating the VEST data, which is based on election
18 results from the Secretary of State. And essentially, it's
19 transforming one geography, one set of boundaries into another.
16:13:30 20 And the way that this is typically done is you look at census
21 blocks or block groups, so very small units within each
22 precinct, and precinct would be made up of many such, and
23 aggregate the data down to go from precinct level to census
24 block level. And then apply the -- and then for the aggregate
16:13:53 25 back up based on which census blocks are in which VTDs instead.

1 So it's a way of estimating vote shares at a different
2 geographic level based on data from the precinct level data.

3 Q Thank you.

4 And then you quote distributed this updated information on
16:14:12 5 the Redistricting Data Hub; is that right?

6 A This data was distributed. I did not distribute it.

7 Q Okay.

8 A I downloaded it from Redistricting Data Hub.

9 Q Okay. My mistake. Thank you.

16:14:23 10 And does distribute meaning anything statistically special
11 here, or does that just mean that Redistricting Data Hub had
12 the information and it was provided?

13 A Yes. I could have said published.

14 Q Published. Okay. Thank you. And am I right, you write
16:14:41 15 then that you, quote, merged the distributed data with the
16 Citizen Voting Age Population data from the U.S. Census'
17 American Community Survey; is that right?

18 A Yes.

19 Q And so what is it to merge the distributed data?

16:14:56 20 A So what I was able to download from the Redistricting Data
21 Hub was VTD level election data, that is, the number of votes
22 cast for each candidate in each election within that unit of
23 geography and then a map, the actual boundaries of that
24 geography, and that's it. There's no data on the people who
16:15:20 25 live there. So I guess the data on the people who live there

1 from the Census Bureau, and the American Community Survey is
2 the annual product of the U.S. Census Bureau, unlike the
3 decennial census, and it's the only government source for data
4 on citizenship. So that's where -- that's our source for
16:15:42 5 Citizen Voting Age Population, and there's a special version of
6 the ACS, the American Community Survey, put out every year by
7 the Census Bureau of those Citizen Voting Age Population tables
8 that are designed for this use for use in redistricting the
9 voting rights cases.

16:16:04 10 And so that data is at a different geographic level. It's
11 at the census block level is the small population or geographic
12 level for that data. So I figure out which census blocks fall
13 into which voting tabulation districts, and then add up the
14 Citizen Voting Page Population for each group to get VTD level
16:16:25 15 population data to go with the VTD level election data.

16 So it's all just -- all the data comes from different
17 places. There's no one place that has it all together. And
18 the bulk of my work on these cases of putting all this together
19 in a way that works to make sense in checking it and validating
16:16:44 20 it.

21 Q Thank you, Dr. Palmer.

22 Am I right that ACS data are survey results?

23 A Yes. But a very, very large scale survey conducted by the
24 Census Bureau, not say -- a very different kind of survey that
16:17:00 25 you might think about a public opinion survey that's looking at

1 a few hundred people.

2 Q Sure. Thank you for that. And these data are as you said
3 different from the decennial census data, right?

4 A Yes.

16:17:11 5 Q And decennial census data are also referred to as, am I
6 right, PL-94 data?

7 A The PL-94 is one way in which the census data is published
8 and distributed I believe primarily for redistricting. It's
9 the first -- it's sort of the first release of the census data,
16:17:32 10 the one that came out last summer for this redistricting cycle.
11 There's many, many other forms in which the U.S. census data is
12 also produced.

13 Q Okay. And the PL 94 data, then, were available when you
14 conducted this analysis; is that right?

16:17:46 15 A Yes.

16 Q Okay. And correct me if I'm wrong, but does ACS data --
17 does it allow you to control for both single-race black or you
18 could call it black alone and any-part black racial
19 demographics?

16:18:05 20 A There's a few different racial categories within the
21 Citizenship Voting Age Population data. I used single-race
22 non-Hispanic black. I believe there is some different
23 multi-racial categories in there, but I am not sure what
24 exactly they are right now.

16:18:27 25 Q Thank you, Dr. Palmer.

1 So I think that answered my next question. But you chose
2 single-race black -- excuse me. You chose single-race
3 non-Hispanic black for your analysis; is that right?

4 A Yes.

16:18:40 5 Q Thank you.

6 And then I think the second bullet point, you described
7 the sources that you used to determine, quote, precinct-level
8 election results and data on actual voter turnout by race for
9 the 2020 general elections; is that right?

16:18:56 10 A Yes.

11 Q And so, again, this data was assembled by the voting and
12 election science team; is that right?

13 A The election results were also from the voting election
14 science team.

16:19:10 15 Q I'm sorry. Was that a -- sorry. Was that a
16 clarification?

17 A Yes. The data -- this full data set was assembled by me.

18 Q Okay.

19 A The election half of it came from the voting election
16:19:28 20 science team. The voter turnout side of it came from the data
21 vendor L2.

22 Q Understood. Thank you, Dr. Palmer.

23 And I did want to ask you about that. So you say the
24 actual turnout rate -- excuse me -- actual turnout by race was
16:19:45 25 calculated by the Redistricting Data Hub using a commercial

1 voter file provided by the data vendor L2, right?

2 A Yes.

3 Q Do you know how L2 determines actual turn out by race?

4 A So L2 gets the voter files from the state, and then they
16:20:07 5 modify the race data a little bit. So Alabama includes
6 self-identified race in the voter file, so L2 can start with
7 that. And then for people where it's unknown or missing, they
8 can do some modeling to try to estimate the race of those
9 people. So it's going to be a little bit different than the
16:20:25 10 one provided by the state, but I did not have access to a state
11 voter file.

12 Q Understood, Dr. Palmer.

13 And the information that L2 got from the state would have
14 come from the Secretary of State; is that right?

16:20:38 15 A I believe so.

16 Q Okay. And to the best of your knowledge, that's the
17 Secretary of State's voter registration. And is it a voter
18 history file or product?

19 A Yes. I don't know in Alabama if it's one big file or if
16:20:57 20 it's produced as two separate files. But a typical voter file,
21 you're going to have a list of every registered voter, and then
22 either within that same list or some other table, a list of
23 every election that each voter voted in, at least within some
24 period of recent years.

16:21:12 25 Q Thank you, Dr. Palmer.

1 And do you know how the Secretary of State categorizes
2 race in its voter registration or voter history files?

3 A I believe that it comes from the voter registration forum
4 where voters are asked to identify their own race by selecting
16:21:31 5 I box from a list.

6 Q And do you know whether voters can select multiple boxes
7 such that they could be multi-racial under the Secretary of
8 State's data?

9 A I don't know.

16:21:48 10 Q Do you know whether the Secretary of State's data includes
11 a box that voters can check that says black?

12 A I believe it does. I know I looked at the -- in *Chestnut*
13 *v. Merrill*, I was working directly with the voter files, but
14 it's been some time since I looked at that form.

16:22:10 15 Q Sure. And do you know, then, what happens if a voter
16 selects two different racial groups?

17 A I don't know.

18 Q Okay. If it's the case that a voter identifies only as
19 black, is it -- excuse me -- let me rephrase the question.

16:22:35 20 If a voter only selects black on the voter registration
21 form, is it fair in your view to say that they identify as
22 single-race black?

23 A I don't know. I don't know how a multi-racial voter would
24 choose to fill out that form.

16:22:56 25 Q If they could select multiple boxes, if they consider

1 themselves to be multi-racial, are they declined to select
2 multiple boxes and select only black, is it fair to assume that
3 they identify as single-race black?

4 MS. MADDURI: Objection. Calls for speculation.

16:23:18 5 Outside the scope.

6 JUDGE MARCUS: Can you answer that question,
7 Dr. Palmer?

8 THE WITNESS: I think for the purposes of voter
9 registration, they are at times choosing to identify themselves
16:23:28 10 as single-race black.

11 JUDGE MARCUS: All right. You may proceed,
12 Mr. Wilson.

13 MR. WILSON: Thank you, Judge. Thank you, Dr. Palmer.
14 BY MR. WILSON:

16:23:44 15 Q So if we could move to the third bullet. You state that
16 you used data, quote, downloaded from the website of the
17 Alabama Secretary of State to find county level election
18 results and data on voter registration by race for the 2012 and
19 2014 general elections, right?

16:24:02 20 A Yes.

21 Q Okay. Do you recall who was running in these elections?

22 A The -- I remember the name of some of the candidates, but
23 certainly not all of them.

24 Q Okay. And how did the 2012 and 2014 election data feature
16:24:25 25 in your analysis?

1 A In Figure 4 and I believe it's Table 3 where I used the
2 county level data to estimate racially-polarized voting at the
3 county level.

4 Q Okay. And you were getting the data on voters' race from
16:24:50 5 the Secretary of State for this analysis, right?

6 A Yes.

7 Q And so per our previous question and answer, you would say
8 that this is, then, single-race data; is that right?

9 MS. MADDURI: Objection. Misstates the testimony.

16:25:06 10 JUDGE MARCUS: I think you can answer the question.
11 Did Mr. Wilson have it right or not, Dr. Palmer?

12 THE WITNESS: It's self-identified racial data, which
13 I believe if they can only check one box, I believe we consider
14 that single-race data.

16:25:21 15 BY MR. WILSON:

16 Q Right. Yeah. Thank you, Dr. Palmer. I appreciate that.
17 And I apologize if my question was unclear.

18 So is it fair to say, then, that the single-race black
19 metric underlies part of your racial polarization analysis?

16:25:35 20 A Yes. I used single-race non-Hispanic black in the Citizen
21 Voting Age Population. And to be fair, that's reflected on the
22 voter file of the other analyses.

23 Q Okay. So to the extent that single -- that -- excuses me.
24 Let me rephrase. To the extent that the single-race black
16:26:00 25 metric is reflected in the second and third analyses that you

1 refer to, you would say that you used single-race black for all
2 of your analysis; is that right?

3 A Yes.

4 Q Thank you, Dr. Palmer.

16:26:15 5 The Secretary of State provides voter registration data in
6 which -- excuse me. I'm sorry.

7 I think we actually already covered some of this.

8 So we talked about Dr. Hood's rebuttal report a little bit
9 earlier. You talk about that report with Ms. Madduri; is that
16:26:54 10 correct?

11 A Yes.

12 Q And you did have a chance to look at this report, right?

13 A Yes.

14 Q And, Dr. Palmer, do you have that report in front of you?

16:27:02 15 A I do not.

16 Q Okay. I will try to share my screen here. Am I sharing
17 my screen here with you, Dr. Palmer?

18 A Yes.

19 Q Thank you.

16:27:36 20 In paragraph 2 of Dr. Hood's supplemental report, he
21 specifically notes the Redistricting Data Hub's data.

22 JUDGE MARCUS: I'm sorry to interrupt you, but could
23 you tell us what number this is among your exhibits?

24 MR. WILSON: Of course. I'm sorry. This is
16:27:54 25 Defendants' Exhibit 6.

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1 JUDGE MARCUS: Thanks.

2 BY MR. WILSON:

3 Q Dr. Palmer, in paragraph 2 of Dr. Hood's supplemental
4 report, he specifically notes that the Redistricting Data Hub's
16:28:15 5 data appears to have several problems; is that right?

6 A He -- I don't think that's right. He notes a comment in a
7 validation report that they were not able to replicate joining
8 election data. That's in paragraph 2, but he doesn't say that
9 that necessarily means there's a problem.

16:28:37 10 Q Fair enough. Thank you, Dr. Palmer. And he notes that
11 it's unclear from his report, and he is referring to your
12 report, how much time Professor Palmer engaged in to validate
13 the quality of data housed on the Redistricting Data Hub
14 website. Did I read that correctly?

16:28:51 15 A You did. I didn't report the amount of time I spent
16 validating the data. In my report though, I spent considerable
17 time doing so.

18 Q Can you describe that process for us?

19 A Sure. So to start with, the best data, which is the one I
16:29:14 20 believe he -- Dr. Hood is discussing here, I looked at the
21 individual records. I looked at the totals of the county and
22 state levels to make sure that the total numbers made sense.
23 Where possible, I looked at a lot of maps of the data to make
24 sure that the units made sense, as well. And most
16:29:38 25 significantly, because this data was updated from precinct

1 level to VTD level, I looked at the exact process that was
2 done. And in fact for 2017, where it was not done, I
3 implemented that same code myself to update the data. So I
4 really -- by the end of the process, I really understood how
16:29:56 5 they assembled their data, why it looked the way it did, how it
6 was organized, and how to recreate parts of that process
7 myself.

8 Q Thank you, Dr. Palmer.

9 And can you estimate about how long this process took you,
16:30:09 10 if you recall?

11 A I don't know exact. It happened, you know, over several
12 different steps of my analysis. You know, I looked at the
13 initial data, understood it, and then as I worked through the
14 analysis, I did continual validation checks, especially around
16:30:26 15 merging. When I am merging -- I have to merge these files
16 together, different data sources, you know, merging takes a lot
17 of time and validation to make sure nothing is getting missed
18 or merging correctly.

19 Q Understood. Thank you. Dr. Palmer. If we could look at
16:30:45 20 Paragraph 3, and I believe Ms. Madduri asked you a little bit
21 about this earlier.

22 Now, Dr. Hood notes that by his finding, at least, the L2
23 data consistently underestimated the percentage of white
24 voters, and the percentage of other voters was consistently
16:31:11 25 overestimated by L2 on an average of about 4 -- a little over

1 4 percent for both; is that right?

2 A That's what Dr. Hood reports, yes.

3 Q Right. Right. Yeah. Just asking about his report here.

4 And do you dispute that conclusion?

16:31:27 5 A I -- I have not compared the baseline registration number
6 Dr. Hood is making the comparison to, but I do find small
7 differences, as well.

8 Q He also notes that the percentage of black voters was
9 overestimated by L2 in some counties and underestimated in
16:31:52 10 others, right?

11 A Yes.

12 Q And did you find those same conclusions?

13 A I did. And we should expect this. Right? We should
14 expect the estimates are going to be slightly different than
16:32:09 15 other data sources. And if we're estimating data, and I also
16 talk about in my report how the voter file I had access to is
17 dated a little bit later than the actual election. As there's
18 some uncertainty, we should expect that numbers will be a tiny
19 bit too high in some and a tiny bit too low in others. That
16:32:29 20 seems completely reasonable to me for estimated data.

21 Q Thank you, Dr. Palmer.

22 And do you agree with Dr. Hood's conclusion that while
23 these discrepancies in the L2 turnout data may not appear to be
24 all that sizeable, they certainly could make a difference in a
16:32:45 25 district functionality analysis where the racial composition of

1 the district in question is evenly divided?

2 A They could make a difference in a functionality analysis
3 conducted using this data. But my functionality analysis did
4 not use this data. They can make no difference to my
16:33:04 5 functionality analysis.

6 Q Understood, Dr. Palmer. And why would this be a problem
7 to use L2 data as Dr. Hood has described it for functionality
8 analysis?

9 A Well, it -- first of all, it might be a problem. We don't
16:33:21 10 know. It depends potentially I would expect on the results of
11 the functionality analysis and, you know, how close the
12 district might be to 50 percent. I believe that Dr. Hood's
13 functionality methodology could use data like this, but that's
14 a different approach to functionality than what I take in my
16:33:43 15 report where I rely just on the actual past election results.
16 I don't do any modeling on the results. I just aggregate them
17 up to the new geographic units.

18 Q Understood, Dr. Palmer. But do you think, then, that the
19 problem with modeling and the estimates that models produce can
16:34:06 20 pose a problem for functionality analysis? Again, not saying
21 that this is what you did here, but in a different
22 functionality analysis, could using estimates pose the problem
23 that Dr. Hood describes?

24 A I suppose it's entirely dependent on the analysis and the
16:34:26 25 estimates and what we're doing. It's not the way I have done

1 this analysis. I find that difficult to answer.

2 Q Fair enough. So if we could actually turn, then, and I am
3 going to go back to your report, and, Dr. Palmer, do you still
4 have your report in front of you?

16:34:45 5 A I do.

6 Q Give me a second to stop sharing. Hopefully that worked.

7 So on page 9 of your report, you offer your expertise
8 regarding the, quote, performance of the majority-minority
9 districts in the illustrative maps; is that correct?

16:35:05 10 A Yes.

11 Q And so the record is clear, these are referring to the
12 Caster plaintiffs' illustrative maps?

13 A Yes.

14 Q Is that right? Thank you. Did you draw those maps,
16:35:20 15 Dr. Palmer?

16 A No.

17 Q Do you know who drew those maps?

18 A I believe it was Mr. Cooper.

19 Q Can you briefly describe how you conducted this analysis?

16:35:35 20 A I was provided shapefiles, that is, geographic mapping
21 files for each of the six maps by plaintiffs' counsel. And I
22 then take that, and I merge that with the election data that's
23 also -- has spatial data in it, the election results,
24 essentially that VEST election data we have been talking about.
16:36:01 25 And so for each district, I look and see which precincts are

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1 contained in that district. And then I aggregate. I add up
2 all the votes for each candidate in each election within each
3 district and say, well, if these are the precincts that voted
4 in this election, this is who would have won, or those are the
16:36:22 5 vote shares that would have resulted.

6 Q Just so I'm tracking, Mr. Cooper part of what he provided
7 you then would be the racial populations of the proposed
8 districts, and then is it fair to say you applied the
9 statistical patterns of racial voting that you had determined
16:36:40 10 to those populations? Is that --

11 A No. No. That's incorrect.

12 Q Okay.

13 A I don't -- I don't know if I was provided the racial data.
14 If it was included, it was not something that I looked at or
16:36:51 15 factored into my analysis. I suppose I had it to know which
16 was the majority-minority district, but I did not actually use
17 those numbers in my analysis. What you are describing is an
18 approach that I believe was used by Dr. Hood in his initial
19 report. I'm not doing that. I'm not looking at the
16:37:09 20 demographics of these places. I am not looking at turnout by
21 race. I'm just taking the actual election results for the
22 physical places that fall within these new districts. I'm
23 looking at the actual votes cast.

24 So let's say a district contains some set of precincts, I
16:37:30 25 add up all the votes cast for each candidate in those

1 precincts, and say, okay, this candidate would have gotten X
2 votes, add it all up, this candidate got Y votes, and now here
3 is the vote share and who won. There's no modeling done
4 whatsoever in my functionality analysis.

16:37:46 5 Q Understood. That's very helpful. Thank you, Dr. Palmer.

6 And we have discussed a procedure -- a statistical
7 procedure called ecological inference throughout your
8 examination; is that right?

9 A Yes.

16:38:05 10 Q And that is the statistical method that your
11 racial-polarization analysis relies on; is that right?

12 A Yes.

13 Q And it's fair to say that ecological inference allows you
14 to estimate how groups vote?

16:38:26 15 A That's the general goal of the analysis.

16 Q Fair enough. That's the goal of the analysis. The goal
17 of ecological inference is to determine how groups vote, right?

18 A Yes.

19 Q And ecological inference, then, does not explain why
16:38:45 20 groups vote the way that they do?

21 A That's correct. That's not the goal.

22 Q And so your report shows that white Alabamians tend to
23 vote Republican; is that right?

24 A I don't believe that's shown in my report, but I believe
16:39:01 25 that to be true.

1 Q You don't believe that that's shown in your report?

2 A I don't think I talk about parties in my report.

3 Q Do you talk about candidates in your report?

4 A In a few places, yes.

16:39:15 5 Q Are you aware of the parties to which the candidates
6 belonged in the elections that you examined, Dr. Palmer?

7 A Yes.

8 Q And did the white candidates of choice belong to the
9 Republican Party?

16:39:34 10 A Yes.

11 Q Thank you.

12 Did you investigate whether white Alabamians tends to vote
13 Republican because of some sort of racial bias?

14 A No. That would be looking at why voters vote the way they
16:39:52 15 do, which is not part of this analysis.

16 Q Right. And ecological inference could not tell you that;
17 is that right?

18 A That's right.

19 Q And did you come to any conclusion about the party for
16:40:03 20 whom black Alabamians tend to vote?

21 A They tend to vote for Democratic candidates.

22 Q And based on your report, do black Alabamians tend to
23 block vote to a greater or lesser extent than white Alabamians?

24 A It depends on the election, but potentially a slightly
16:40:34 25 greater extent in some elections, but not in all of them.

1 Q Okay. And I think you have already said this, but the
2 racial-polarization analysis you conducted can't explain why
3 black Alabamians tend to vote for Democrats, can it?

4 A That's right. That's not the intent of this analysis.

16:40:59 5 Q Uh-huh. So is it fair, then, to say that someone using
6 ecological inference cannot say whether people cast votes
7 because they like a candidate as opposed to because they
8 dislike another candidate?

9 A I suppose so. We just simply see they prefer one
16:41:25 10 candidate to another.

11 Q Right. And so, for example, Dr. Palmer, are you familiar
12 with the concept of a protest vote? Have you heard that term
13 before?

14 A Yes.

16:41:37 15 Q And would it be fair to say that a protest vote occurs
16 when someone votes really because they dislike a certain
17 candidate and so they are going to vote for someone else?

18 A I think that's reasonable.

19 Q Okay. So a protest vote would be like I oppose this
16:41:57 20 candidate, and I don't care. I'm just going to cast a vote
21 that opposes this person, right?

22 A Yes. You're describing a reason why somebody might cast
23 their vote a certain way, which is not the purpose of this
24 analysis.

16:42:10 25 Q Right. So ecological inference then you would agree can't

1 show whether groups are voting for one candidate or against
2 another; is that right?

3 A I'm not sure that's something that we can ever separate.
4 It's showing that they prefer one candidate to another is the
16:42:36 5 same thing as showing they don't prefer the other candidate.
6 So I am not sure we can say like versus dislike, everything is
7 relative.

8 Q Okay. Fair enough. I am going to try to share something
9 again.

16:42:53 10 And I believe if I do this correctly, Dr. Palmer, am I
11 sharing your report? Are you able to see your report in the
12 record? This is Caster Exhibit 79.

13 So I would like to go down to page 5 and paragraph 17 of
14 your report. You wrote that in paragraph 17, White voters are
16:43:34 15 highly cohesive in voting in opposition to the black candidate
16 of choice in every election.

17 Did I read that correctly?

18 A Yes.

19 Q And in paragraph 16, you also refer to black voters as
16:43:49 20 supporting their candidates of choice, right?

21 A Yes.

22 Q I think earlier in your direct examination, you referred
23 to white voters as opposing black-preferred candidates. Do you
24 recall that?

16:44:05 25 A Yes.

1 Q Okay. But you agree that ecological inference can't
2 actually confirm that white voters are voting because they
3 affirmatively oppose black-preferred candidates; is that right?

4 A I'm not sure I understand that. I use the terms as a
16:44:26 5 relative term. A black voter supporting their candidate of
6 choice is the same thing as a black voter opposing the white
7 candidate of choice. And vice versa. These are just relative
8 measures of support. I don't use these labels to denote that
9 one party is voting, you know, in a -- because they like
16:44:47 10 candidates, whereas the other is voting dislike or vice versa.
11 We're purely looking at relative relevance.

12 Q So to vote for or against someone in a binary election,
13 you would say that those are basically synonymous, or at least
14 is that how you intend to use them in your report?

16:45:04 15 A Yes. I think that anything else is trying to get at why
16 people vote the way they do, and here, it's just what is your
17 ranking of these candidates, who are you choosing to vote for.

18 Q Understood. Thank you, Dr. Palm ever.

19 So in paragraph 18 in the final sentence, you write, Every
16:45:24 20 election, black voters have a clear candidate of choice, and
21 white voters are strongly opposed to this candidate. Did I
22 read that correctly?

23 A Yes.

24 Q And so what does it mean for white voters to be strongly
16:45:39 25 opposed this candidate?

1 A They are voting -- they are strongly or cohesively voting
2 for the opponent of the black candidate.

3 Q So to be clear, then, your analysis is not suggesting that
4 white voters have a particularly -- individually have a
16:46:00 5 particularly strong opposition. What you mean by strongly
6 opposed is that white voters by a large margin are voting for
7 the white-preferred candidate; is that right?

8 A Yes.

9 Q Okay. And because these are synonymous terms, you could
16:46:19 10 have rewritten the last sentence of paragraph 18 to say that
11 white voters have a clear candidate of choice, and black voters
12 are strongly opposed to this candidate; is that right?

13 A Yes.

14 Q And what do you mean when you say that black voters are
16:46:42 15 strongly opposed to the white-preferred candidate?

16 A In that case, large majorities of black voters are voting
17 against the white-preferred candidate.

18 Q Would this be evidence that black Alabamians vote for
19 racist reasons?

16:46:58 20 A No. Once again, we're never getting at intent in this
21 analysis. We're never getting at reasons -- reasons for voting
22 in this analysis.

23 Q Would this analysis support the inference that black
24 Alabamians are voting for racist reasons?

16:47:15 25 A No. This analysis provides no evidence about why people

1 vote the way they do.

2 Q Okay. I think just a couple more questions, Dr. Palmer.
3 I appreciate your patience.

4 In your view, Dr. Palmer, does block voting approximate
16:47:45 5 racial animus?

6 MS. MADDURI: Objection. Asked and answered.
7 Dr. Palmer has explained his response to this in numerous
8 different ways.

9 JUDGE MARCUS: We will take it one more time.
16:47:57 10 Overruled.

11 THE WITNESS: Can you repeat the question, please?

12 BY MR. WILSON:

13 Q Of course. Thank you. Dr. Palmer, does block voting
14 approximate racial animus?

16:48:08 15 A I don't think evidence of block voting says anything about
16 racial animus.

17 Q Thank you, Dr. Palmer.

18 So is it fair to say that even where racial polarization
19 in voting is high, partisanship or political platforms may
16:48:28 20 explain the different voting preferences of different races?

21 MS. MADDURI: Objection. Asked and answered.

22 JUDGE MARCUS: I think he has asked and answered this
23 question a number of times. If I heard him right, Mr. Wilson,
24 he said that he can tell you nothing about the why question,
16:48:52 25 just the how question. And I think you have probed that in any

1 number of different ways.

2 So can we move on, please?

3 MR. WILSON: Of course, Judge Marcus. Thank you. I
4 will move along.

16:49:04 5 BY MR. WILSON:

6 Q Dr. Palmer, you've served as an expert witness or
7 litigation consultant on numerous cases involving voting
8 restrictions; is that right?

9 A Yes.

16:49:20 10 Q Did any of these numerous cases require you to analyze
11 whether racially-polarized voting existed where a majority of
12 white voters supported the Republican Party?

13 A I'm sorry. Can you repeat the question?

14 Q Sure. Did any of these numerous cases require you to
16:49:45 15 analyze whether racially-polarized voting existed where a
16 majority of white voters supported the Republican Party?

17 A Yes.

18 Q I apologize. I'm still sharing, and I don't need to be.
19 So let me stop that.

16:50:07 20 And in these cases where a majority of white voters
21 supported the Republican Party, did you ever conclude that
22 elections were not racially polarized?

23 A I don't believe so.

24 Q Dr. Palmer, are you aware of any parts of Alabama where
16:50:29 25 African-Americans predominantly support the Republican Party?

1 A I don't know.

2 Q Are you aware of any parts of America in which
3 African-Americans predominantly support the Republican Party?

4 A I don't know.

16:50:43 5 Q Do you know whether at the national level African-American
6 voters tend to vote for the Democratic Party?

7 A They do.

8 Q Does this mean that as far as you're aware, voting will be
9 racially polarized any place in America with both black voters
16:51:08 10 and Republican-leaning white voters?

11 MS. MADDURI: Objection. Calls for speculation.
12 Outside the scope of Dr. Palmer's report.

13 JUDGE MARCUS: Overruled. You may answer if you can.

14 THE WITNESS: Can you repeat that, please?

16:51:23 15 MR. WILSON: Sure, Dr. Palmer.

16 BY MR. WILSON:

17 Q Sure. I asked you earlier whether you are aware that
18 African-American -- whether you are aware if African-American
19 voters throughout the country tend to vote for the Democratic
16:51:36 20 Party, and the answer was yes, right?

21 A Yes.

22 Q And so my question, then, is: Does mean that as far as
23 you're aware, voting will be racially polarized any place in
24 America with both black voters and Republican-leaning white
16:51:52 25 voters?

1 A I suppose it first depends on what you mean by Republican
2 leaning. If it's say 80, 90 percent of white voters are
3 Republican like here in Alabama, then we are likely to find
4 that it's likely to be polarized. We can't always detect it.

16:52:14 5 It depends on the data, whether we can identify
6 racially-polarized voting. I think that's a separate question,
7 whether it exists.

8 If, you know, when you say white voters tend to support
9 the Republican Party and it's something like 55 percent of them
16:52:28 10 are Republican, I would not classify that as racially-polarized
11 voting.

12 Q Fair enough. Have you ever heard of racial polarization
13 existing where a majority of white voters supported Democrats?

14 A I don't believe so in at least the recent era.

16:52:47 15 Q Thank you for that clarification.

16 So is it true, then, that to the best of your knowledge,
17 racial polarization has only been found to exist where whites
18 tend to vote for Republicans?

19 A I believe that's been my finding in my reports.

16:53:09 20 Q Are you aware of any reports that have come to the
21 opposite conclusion?

22 A I don't believe so.

23 MR. WILSON: And, Your Honor, if I may have one moment
24 to confer with my counsel?

16:53:30 25 JUDGE MARCUS: You sure can.

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1 MR. WILSON: I think that's all we have. Thank you
2 for your time.

3 JUDGE MARCUS: Thank you. We have redirect,
4 Ms. Madduri?

16:53:50 5 MS. MADDURI: No, Your Honor.

6 JUDGE MARCUS: No further questions, then, that anyone
7 has for Dr. Palmer? Judge Manasco, Judge Moorer, any
8 questions?

9 JUDGE MANASCO: None from me.

16:54:05 10 JUDGE MOORER: None.

11 JUDGE MARCUS: Thank you, Dr. Palmer. You are
12 excused.

13 What is your pleasure, folks, at this point? And let me
14 raise one other thing with you as you tell me your pleasure.

16:54:21 15 Judges Manasco, Moorer, and I discussed earlier the
16 prospect and preference if it's agreeable with all of you to
17 begin tomorrow morning at 8:30 Central Standard Time rather
18 than 9:00 o'clock Central Standard, and it would be 9:30
19 Eastern Time so we can get an earlier start on Dr. Bryan's
16:54:52 20 testimony tomorrow. Does that work -- do any of you have any
21 problem with that? I see none.

22 MR. DAVIS: No.

23 JUDGE MARCUS: What is your pleasure, then, at this
24 point? You have about 25, 30 minutes left in the schedule we
16:55:11 25 had set. I don't know that it makes sense to start anybody

1 now. You tell me what your pleasure is.

2 MR. DAVIS: Your Honor, for Secretary Merrill, I do
3 not have a preference. If the Court would like, if I could
4 have about three minutes to go downstairs where Mr. Wilson just
16:55:25 5 was and get set up, and Mr. Bryan will take my place here.

6 We're happy to get 30 minutes out of the way. We're happy to
7 wait until the morning. Up to the other parties and the Court.

8 JUDGE MARCUS: So you are happy to start with Bryan
9 right now is what you are saying?

16:55:40 10 MR. DAVIS: Whatever the parties and the Court prefer.

11 JUDGE MARCUS: Let me turn to your colleagues for each
12 of the plaintiffs. What is your pleasure, Ms. Khanna, and
13 Mr. Ross? Do you prefer we start him tomorrow morning, or
14 would you just as soon have him start today?

16:55:57 15 MS. KHANNA: Your Honor, I think we'd just as soon
16 have him start today if there's time.

17 JUDGE MARCUS: Mr. Ross, do you have the same view?

18 MR. ROSS: Yes, Your Honor.

19 JUDGE MARCUS: All right. Since you have all agreed,
16:56:10 20 then why don't we take a few minutes, Mr. Davis, give you a
21 chance to bring Mr. Bryan up, and we'll get started in about
22 five minutes.

23 Thank you.

24 (Recess.)

17:03:05 25 JUDGE MARCUS: Are the parties ready to proceed?

1 MR. DAVIS: We're ready.

2 MS. KHANNA: Yes, Your Honor.

3 JUDGE MARCUS: I take it you are calling Mr. Bryan at
4 this point.

17:03:13 5 MR. DAVIS: We are, Your Honor.

6 JUDGE MARCUS: All right. Thank you. Mr. Bryan, if
7 you would raise your right hand, we will swear you in at this
8 point.

9 THOMAS BRYAN,
10 having been first duly sworn, was examined and testified as
11 follows:

12 JUDGE MARCUS: If you would be kind enough to state
13 your name for the record.

14 THE WITNESS: Thomas Mark Bryan, B-R-Y-A-N.

17:03:38 15 JUDGE MARCUS: Thank you, sir. You may proceed.

16 MR. DAVIS: Thank you, Judge.

17 DIRECT EXAMINATION

18 BY MR. DAVIS:

19 Q Good evening, Mr. Bryan.

17:03:45 20 A Good evening, sir.

21 Q What is your profession?

22 A I am a professional demographer.

23 Q Do you have an educational background in demography or
24 related to the field?

17:03:58 25 A Yes.

1 Q What degrees do you hold related to the field?

2 A I have an undergraduate degree in history from Portland
3 State University. I have a master's degree in urban studies
4 from Portland State University. I have a master's degree in
17:04:14 5 management in information systems technology from George
6 Washington University.

7 Q And do you have experience in the area of redistricting?

8 A Yes, I do. I have worked for approximately 20 years as an
9 expert. I have performed analysis, developmental plans,
17:04:39 10 critiquing of plans of approximately 50 political districting
11 or redistricting exercises, and approximately 150 school
12 redistricting exercises during that time.

13 Q So have you been hired by any jurisdictions to draw plans?

14 A Yes, I have.

17:05:00 15 Q At what levels have you either drawn plans or assisted in
16 drawing plans?

17 A I have drawn plans or assisted in the drawing of plans at
18 all levels of geography. I have participated in either the
19 litigation of plans or the drawing of plans at the state level
17:05:21 20 this year in four different states. I have also participated
21 in the drawing -- or the critique of the drawing of plans at
22 the local level, county level, and small areas over the course
23 of my entire career.

24 Q And do you have experience, Mr. Bryan, in studying and
17:05:43 25 critiquing a plan that someone else has drawn?

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1 A Yes, I do, extensively.

2 Q Do you have experience with databases combining
3 demographic and election data?

4 A I do. I have significant background and experience in
17:06:01 5 census data. I used to be an employee of the Census Bureau.
6 And I am familiar with their databases and their techniques
7 based on my employment there. I leveraged that experience and
8 background to use those data in combination with other data
9 sets, in some cases, political data for the benefit in some
17:06:23 10 instances of supporting political scientists in their roles in
11 cases such as this.

12 Q What is the field of statistical transformation,
13 Mr. Bryan?

14 A Statistical transformation, it's an area of looking at
17:06:39 15 data that, you know, may or may not make sense or may or may
16 not be useful in the forum that they're actually reported in.
17 And so we as statisticians, demographers, and analysts have to
18 take the opportunity to do work with data that we're presented
19 in order to change it into a form that's more readily usable or
17:06:59 20 easily interpretable by our audience.

21 Q Thank you. And do you have experience, then, in
22 statistical transformation as you have described it?

23 A Yeah. Yes, we do. It's a common practice in demography.
24 There is a wide variety of different ways we can do it and
17:07:15 25 circumstances under which we would do it in order to make data

1 more useful or interpretable by our audience.

2 Q Are you experienced to predicting population shifts?

3 A Yes, I am. I have been published. I am the author of the
4 section on population estimates and projections in a book
17:07:35 5 called The Methods and Materials of Demography. It's commonly
6 referred to in the field as the Bible of demography.

7 I have experience in writing peer-reviewed journals,
8 papers, and sections of other books with coauthors that I
9 commonly work with in this space. It was also an area in which
17:07:56 10 I was professionally trained and developed expertise when I
11 worked at the Census Bureau.

12 Q Thank you. And when did you work at the Census Bureau?

13 A It was approximately 1998 to 2001, during the course of a
14 decennial census and during the development of the American
17:08:16 15 Community Survey. Thank you.

16 Q You should have a copy of a notebook with our exhibits in
17 it, Mr. Bryan, at least available to you. Would you take a
18 look at Defense Exhibit 3 and tell us if that is a copy of your
19 CV?

17:08:29 20 A Yes. I have that document.

21 Q Thank you. I just wanted to identify it for the record.

22 MR. DAVIS: At this time, Your Honors, we move to
23 tender Mr. Bryan as an expert in redistricting, demography,
24 statistical transformation, and predicting population shifts,
17:08:46 25 which Mr. Bryan can explain is also known as applied

1 demography.

2 JUDGE MARCUS: Any objections from counsel for the
3 plaintiffs?

4 MR. BLACKSHER: No.

17:08:56 5 MS. KHANNA: No objection, Your Honor.

6 JUDGE MARCUS: And for the Milligan folks, any
7 objection? I'm sorry. We can't hear you in New York because
8 you are muted. You are still muted, so we can't hear you. Get
9 someone to help him unmute.

17:09:27 10 He would be for Milligan or for --

11 MR. DUNN: Did that help?

12 JUDGE MARCUS: That's perfect. Thank you.

13 MR. DUNN: Thank you, Your Honor. I take it you can
14 see and hear me.

17:09:38 15 JUDGE MARCUS: I can. If you would just state your
16 name and who you represent.

17 MR. DUNN: I'm sorry. Yes, my name is David Dunn. I
18 am with Hogan Lovells, and I will be representing the Milligan
19 plaintiffs for this witness. We don't have an objection, Your
17:09:49 20 Honor, except we'd like to reserve the right to ask some
21 questions on cross-examination that would go to the scope and
22 the weight potentially of the witnesses's testimony if that's
23 acceptable.

24 JUDGE MARCUS: You are perfectly free to do that.

17:10:05 25 For the Singleton folks, I am not sure that you are going

1 to do any cross here, but I just wanted to give you that
2 opportunity. And if you were going to exercise it, whether you
3 had any objection to qualifying Mr. Bryan as an expert in the
4 fields Mr. Davis specified.

17:10:25 5 MR. BLACKSHER: We have no objections to his being
6 qualified in those fields, Your Honor, and, yes, we would like
7 the opportunity to cross-examine him. We will need at least an
8 hour. I have agreed with counsel for the Milligan and Caster
9 plaintiffs to go last, so I'm sort of putting my marker down
17:10:45 10 now. Before Mr. Bryan leaves for parts unknown, I need an hour
11 left for me, please.

12 JUDGE MARCUS: You will have the opportunity to
13 cross-examine him as fully as you deem appropriate.

14 Having said that, Mr. Bryan is accepted as an expert,
17:11:04 15 Mr. Davis, in the fields that you have specified, and you may
16 proceed with your examination.

17 MR. DAVIS: Thank you.

18 BY MR. WILSON:

19 Q Mr. Bryan, are you familiar with traditional redistricting
17:11:14 20 principles?

21 A Yes, I am.

22 Q Where do you look to find out what those are?

23 A The most common source that I look to nationally as the
24 starting point if I am going to get kind of the ground truth
17:11:29 25 nationwide would be an organization called NCSL, National

1 Conference State Legislature, widely regarded as the kind of
2 go-to organization for information like that. They've got a
3 variety of different traditional districting principles that
4 are in common use throughout the United States.

17:11:51 5 Q Thank you. Tell us what some of those traditional
6 districting principles are one by one and describe them,
7 please, just in brief fashion?

8 A Yeah, sure, of course.

9 Some of the guidance that they recommend that I see
17:12:06 10 followed in different cases in the United States are things
11 such as compactness, contiguity. I think as Dr. Duchin
12 described earlier, there is a variety of different types of
13 contiguity, and we strongly advocate that.

14 Preservations of geographic, political subdivisions,
17:12:27 15 preservations of communities of interest, what we would call
16 COIs. They also recommend things such as not pairing
17 incumbents. They don't want to unnecessarily put incumbents
18 that may already represent a constituency, pit them against
19 each other in an election.

17:12:50 20 There are some other emerging principles, maybe not
21 necessarily traditional or existing principles, but there's
22 kind of a movement more recently to do things like try to
23 remove partisanship, for example, or introduce this concept of
24 proportionality into the redistricting process.

17:13:10 25 Those are pretty much the scope of the most widely used

1 and referred to traditional principles.

2 Q These emerging principles you mentioned, addressing
3 partisanship and proportionality, what kind of proportionality
4 do you mean?

17:13:27 5 A Basically coming up with neutral like data science based
6 ways of balancing population and kind of prioritizing less
7 emphasis on other redistricting principles. It's not an area
8 that's widely used, and it's not an area that I understand is
9 being used -- leveraged in the Alabama case.

17:13:47 10 Q I know that a couple of states that have new districting
11 commissions to draw districts for different bodies, the states
12 have -- may say that we prefer that if 30 percent of the
13 statewide vote went Democrat, then we would prefer 30 percent
14 of the state legislative seats be Democrat. Is that the kind
17:14:11 15 of proportionality you are talking about?

16 A Yeah, that's correct.

17 Q What about preserving the core of districts? Is that a
18 recognized traditional districting principle?

19 A Sure. Sure. Yeah, it is. It's, you know, kind of a part
17:14:26 20 of a tenet what we would call continuity of representation.
21 Making sure that you don't pair incumbents kind of follows
22 under that same principle assuring that if there is a community
23 of interest population that's been represented by a particular
24 representative, he or she has a chance of continuing that
17:14:48 25 representation. And then obviously, ensuring as you

1 redistrict, the degree to which you keep districts whole and
2 don't change them unnecessarily to meet changing criteria is
3 important to ensuring that continuity of representation.

4 Q Why should a map drawer observe traditional districting
17:15:17 5 criteria, Mr. Bryan?

6 A I think that these are very well-established criteria.
7 They're long standing, and they give us a common of set of
8 rules and guidelines that when we go through this extremely
9 important difficult process of redistricting, they are a bit of
17:15:40 10 guidance that we can use and we can all refer to. And whether
11 you agree on whether one may be more important or less
12 important than another one, at least, all the parties that are
13 involved know what those different principles are and have a
14 common rule book to play by.

17:15:56 15 Q You know, in -- can you give us an estimate of how many
16 times you have been retained to draw a plan or assist in
17 drawing a plan?

18 A Yes. My estimated in the 20 years of doing this for the
19 purpose of districting and political redistricting is
17:16:17 20 approximately -- the number of cases I have work on is
21 approximately 50. If you were to say what are the number of
22 plans that I have drawn or attempted to draw underneath those
23 cases, they would be in the hundreds. As you have seen in this
24 case, some of the other plaintiffs have brought, you know,
17:16:37 25 experts that have drawn, four, five, six, ten different maps,

1 you know, just for this one particular case.

2 So there is a number of cases versus how many maps are
3 drawn are two different metrics.

4 Q When somebody hires you and says, you know, Mr. Bryan, we
17:16:52 5 want you to help us draw new districts for our local school
6 board or for our county commission or for our state Senate, do
7 you usually start with a blank outline of the jurisdiction, or
8 do you start from the previous plan?

9 A Yeah. So the first thing that I would do is since I do
17:17:17 10 redistricting across the United States, I work in many
11 different states that have the different prioritization of the
12 different principles. But more often than not, the starting
13 point for doing redistricting or political redistricting is to
14 begin with the plan that's in place, again, trying to conform
17:17:37 15 with the principle of continuity of representation. And then I
16 would typically seek to learn about communities of interest,
17 the political landscape, the priorities of the policy makers,
18 and try and help best understand how we can adopt that plan to
19 be best suited to the new demographic reality after we have a
17:18:03 20 census.

21 Q Thank you. In the course of your work in this case, have
22 you had an opportunity to assess the plan passed by the
23 Legislature last November, the congressional plan?

24 A I have had an opportunity to assess the plan, yes.

17:18:15 25 Q Okay. I would like to show you -- this is Defense

1 Exhibit 1. Is this a copy of the report that you provided in
2 Singleton versus Merrill?

3 A Yes. It appears to be.

4 Q Okay. I want to refer you to page 67 of that report.

17:18:46 5 Is this the plan passed by the Alabama Legislature and
6 signed by the governor just a couple of months ago?

7 A Yes, that's correct.

8 Q I want to now look at the next page, page 68?

9 A Sure.

17:19:04 10 Q Would you please explain to the Court what are you showing
11 us with this map?

12 A Sure. There is a dark outline, a heavy dark outline, and
13 that shows the outline of the existing plan. There is another
14 outline sometimes layered underneath it because there's a lot
17:19:34 15 of continuity of these districts that shows what the
16 adjustments were to the existing plan and what the differences
17 are of the existing plan to the new plan.

18 And what I see in this plan is that it largely represents
19 what I would call a least-changes plan. There are no wholesale
17:19:59 20 significant changes in the geography except what appears to be
21 necessary in order to achieve one person one vote balance
22 population requirements.

23 Q I see. And what does this show us that the Legislature
24 did with District 5 in the northern part of the state?

17:20:16 25 A Sure. So it appears that he took District 5, which ran

1 east to west and slightly reduced the size of that to reduce
2 the population there, and this would suggest that perhaps the
3 -- relative to the rest of the state, there may have been more
4 population there than in some other parts of the state where
17:20:40 5 boundaries had to be expanded to add population.

6 Q I see. And what does it mean when district has to give up
7 geography? What does that tell us about whether the district
8 was underpopulated or overpopulated after the 2020 census?

9 A Sure. Typically, if you are going to reduce the
17:21:01 10 geography, that means that it was overpopulated, and that
11 excess population needs to be moved to other districts that may
12 have been more equitably populated or perhaps underpopulated.

13 Q And then if a district had to expand in geography, does
14 that mean it was underpopulated or overpopulated?

17:21:21 15 A Yes, that's typically the interpretation, that's correct.

16 Q Yeah. Okay. What do you see that the Legislature did
17 with District 7 in this map?

18 A Yes, sir. District 7 is -- it's a very interesting
19 district. I see looking at the existing outline where it goes
17:21:42 20 up into Birmingham. It has this narrow thread kind of pushing
21 up to the northeast, and then kind of similarly to the south,
22 kind of the south central part of it. There was some irregular
23 geography down there, as well. And what -- from this map alone
24 without knowing the characteristics in any of the population,
17:22:05 25 which were not taken into my understanding is we're not taking

1 into account in the drawing of the map, I can see that the
2 outline, the boundaries of District 7 seem to have been what's
3 called generalized. They have been simplified. In laymen's
4 terms, you could say they were cleaned up. And that was
17:22:26 5 probably in an effort to improve the compactness of the
6 district while they adjusted it in an effort to balance its
7 population.

8 Q District 7 was underpopulated after the 2020 census,
9 correct?

17:22:41 10 A That's my understanding, yes.

11 Q Yes. This area in the southern part, is it correct that
12 the Legislature undid what was previously a split of Clarke
13 County?

14 A I cannot speak to that.

17:22:57 15 Q Fine. You probably don't have the right information in
16 front of you at the time.

17 A I did not. I am aware of the Birmingham changes.

18 Q Sure. Did you assess the demographics of the 2021 plan?

19 A I did.

17:23:11 20 Q And we are going to turn now to page 16 of your report.
21 This is still Defense Exhibit 1.

22 Is this where you present the demographic of the new
23 congressional plan passed by the Alabama Legislature?

24 A Yes. These are four tables showing the total population,
17:23:37 25 the Voting Age Population, for the existing plan and then --

1 the for the new plan, so four tables of data representing the
2 seven districts in total.

3 Q

4 I see. So you on this page, page 16 of D-1 --

17:23:52 5 A Yes.

6 Q -- you addressed demographics of both the new
7 congressional districts and the previous congressional
8 districts?

9 A That's correct.

17:23:59 10 Q What do you see here about how the demographics changed,
11 if they did, in District 7?

12 A What's very interesting about this, I would note first
13 that the plan is legal and compliant. When I look in Table 4.3
14 under total population, I can see that the deviation there is
17:24:19 15 all within one person. It's a first thing as an expert that I
16 would always check for.

17 The next thing that I would look at is what was the
18 population at the time of the census of what the existing plan
19 was. That is, how much did the existing districts and the
17:24:35 20 existing plan need to change in order to get that equitably
21 balanced population we see in Table 4.3.

22 So as you can see, in Table 4.5, that is our starting
23 point. And as you can see after ten years of the census, the
24 population is unbalanced. This is why we have a law saying
17:24:58 25 that we need to redistrict.

1 Some of these districts, such as District 1, District 3,
2 District 5, overpopulated. And then there are some districts,
3 such as District 7 in particular, District 2, to a lesser
4 degree, that are underpopulated.

17:25:17 5 In the process of redistricting, District 7 needed to have
6 its population increased from 664,611 up to 717,754.

7 What is notable to me as I assess this plan is I go over
8 and I look at the composition of that population change. So I
9 examine what I have referred to as the black-alone population
17:25:48 10 or what I have referred to as all black. Others are referred
11 to as any-part black population, because it gives us a
12 comprehensive, a thorough view of the change in the population
13 that drove the rebalancing during the redistricting process.

14 What I noticed as I examined this was that as you will see
17:26:10 15 in District 7, Table 4.5, if you read across, there's
16 approximately 404,000 blacks that were in the existing District
17 7, approximately 415,000 if you look at any-part black or the
18 all-black population.

19 If you go back up to Table 4.3, what is noticeable is that
17:26:38 20 those black populations who existed at the time of the census
21 were actually reduced as part of the process of redistricting.

22 Now, it's my understanding that race did not have a
23 factor, in fact, wasn't even looked at as part of the process.
24 But as part of the process of drawing new balanced compact
17:27:02 25 districts, it is, in fact, an artifact of that process that the

1 black population was reduced by approximately 5,000 give or
2 take if you were looking at black alone or the all-black
3 population.

4 The results of that is that the percent black in District
17:27:21 5 7 was reduced from 62.4 percent to 57.1 percent. It was
6 effectively -- even though that was not the objective of
7 drawing District 7, that is an outcome of it.

8 So that outcome was driven further by the fact that the
9 map drawer, who I do not know, had to add approximately 50,000
17:27:45 10 people to that district in order to make it whole. And the
11 vast majority of the people who were added had to have been
12 non-black population, which were overwhelmingly white but some
13 Asian, Hispanics, native and Pacific islanders, and other
14 smaller populations that were put together in order to drive
17:28:07 15 the balancing of the population.

16 Q Let's try to put that together, Mr. Bryan. Back to 4.5,
17 just to make sure a couple of points that you made are clear
18 for the record.

19 This chart shows what the population was in the old
17:28:22 20 district lines but with 2020 census data; is that correct?

21 A Yes, sir.

22 Q Okay. So we know -- well, what after the 2020 census was
23 the ideal population of the 7 congressional districts in
24 Alabama?

17:28:37 25 A So seven, it's fractional because you can't divide it

1 exactly, but it's 717,754. So you think you have one layer
2 with 755. It takes into account the fractions.

3 Q Gotcha. So we can look at your Table 4.5 and with some
4 addition and subtraction figure out how much each district
17:28:59 5 needed to shrink or grow by population?

6 A Yes.

7 Q Okay. And you found that after the redistricting process
8 the number of African-Americans in District 7 went down?

9 A That's correct. And in no matter which way you measure
17:29:18 10 whether it is black alone or any-part black, there is less
11 black population in District 7 than was there before.

12 MR. DAVIS: At this point, Your Honor, I am about to
13 move to an assessment -- to Mr. Bryan's assessment of the
14 Singleton plan, a new subject. I am happy to continue as long
17:29:37 15 as the Court would like. If you wish to break at our usual
16 time, I am about to enter into a new subject area.

17 JUDGE MARCUS: Well, this is about 5:30. This would
18 be our usual time.

19 So we will pick up the thread tomorrow morning. But we
17:29:52 20 will pick up the thread at 8:30 Central Standard Time, so you
21 will get an extra half hour in tomorrow.

22 Quick question, just so I have some sense: Rough sense,
23 about how much time you have with Mr. Bryan, Mr. Davis,
24 remaining?

17:30:12 25 MR. DAVIS: Your Honor, my best guess would be two to

1 two-and-a-half hours. That might be long. There's so much
2 that he has to go through with the three cases.

3 JUDGE MARCUS: I understand. We are not holding you
4 to it. I am just trying to get a sense of whether we
17:30:28 5 realistically will be able to finish tomorrow.

6 Ms. Khanna, how long do you think you will be?

7 MS. KHANNA: I still think we will probably be about
8 an hour on our cross.

9 JUDGE MARCUS: Okay. And, Mr. Dunn, what's your sense
17:30:42 10 to the extent you have?

11 MR. DUNN: I would say an hour to an hour-and-a-half,
12 Your Honor.

13 JUDGE MARCUS: And, Mr. Blacksher, you needed an hour,
14 you said.

17:30:51 15 MR. BLACKSHER: Yes, Your Honor.

16 JUDGE MARCUS: So by my count, we have about
17 five-and-a-half to six-and-a-half hours in all. But we'll see
18 where we go. I only say that so that you may have time for the
19 Singleton and Caster folks to put someone else on, on Friday
17:31:17 20 later in the afternoon. You may want to just have them lined
21 up. And we'll just take it from there.

22 With that, I thank you. Unless there's anything else --

23 MR. DUNN: Your Honor, I just had one small thing,
24 because I think Mr. Bryan has only testified once before.
17:31:34 25 Could I ask the Court to caution him that overnight he should

1 not discuss his testimony with anyone whatsoever?

2 JUDGE MARCUS: Sure. I understand, Mr. Bryan
3 understands the rules, and I know the lawyers do.

4 With that, I thank you --

17:31:45 5 MR. DUNN: Okay. Great.

6 JUDGE MARCUS: With that -- Judge Manasco?

7 JUDGE MANASCO: Judge Marcus, I was just going to let
8 everybody know that Frankie will open the Zoom at 8:00 a.m.
9 tomorrow since we will be begin court at 8:30 so people can
17:31:57 10 start being allowed in at 8:00.

11 JUDGE MARCUS: All right. With that, I thank you all.
12 Have a good evening, and we will see you back here at 8:30
13 Central Standard Time tomorrow.

14 (Whereupon, the above proceedings were concluded at
15 5:32 p.m.)

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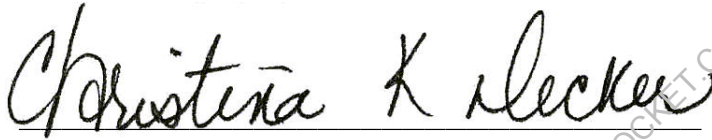
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CERTIFICATE

I certify that the foregoing is a correct transcript from the record of proceedings in the above-entitled matter.

A handwritten signature in cursive script that reads "Christina K. Decker". The signature is written in black ink and is positioned above a horizontal line.01-06-2022

Christina K. Decker, RMR, CRR
Federal Official Court Reporter
ACCR#: 255

Date

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