

**MOORE, et al.**

**VS**

**LEE, et al.**

---

**JONATHAN CERVAS**

**December 13, 2022**



**Jerri L. Porter, RPR, CRR, CLR, LCR**

Chattanooga (423)266-2332   Jackson (731)425-1222  
Knoxville (865)329-9919   Nashville (615)595-0073   Memphis (901)522-4477  
[www.elitereportingservices.com](http://www.elitereportingservices.com)

1  
2           IN THE CHANCERY COURT OF TENNESSEE  
3           FOR THE TWENTIETH JUDICIAL DISTRICT

---

4           TELISE TURNER, GARY WYGANT,  
5           AND FRANCIE HUNT,

6                 Plaintiffs,

7           vs.    Case No. 22-0287-IV  
8    THREE-JUDGE PANEL

9           BILL LEE, Governor,  
10           TRE HARGETT, Secretary of State,  
11           MARK GOINS, Tennessee Coordinator  
of Elections, all in their official  
capacity only,

12                 Defendants.

---

13  
14                 Deposition of:

15                 JONATHAN R. CERVAS

16                 Taken on behalf of the Defendants  
17                 December 13, 2022

18                 Commencing at 9:12 a.m.

---

19  
20  
21                 Elite-Brentwood Reporting Services  
22                 www.elitereportingservices.com  
23                 Jerri L. Porter, RPR, CRR, LCR  
24                 P.O. Box 292382  
25                 Nashville, Tennessee 37229  
                       (615)595-0073

1  
2                   A P P E A R A N C E S  
3

4       For the Plaintiffs:

5                   SCOTT P. TIFT  
6                   Attorney at Law  
7                   Barrett, Johnston, Martin & Garrison, LLC  
8                   414 Union Street  
9                   Suite 900  
10                  Nashville, TN 37219  
11                  (615)244-2202  
12                  stift@barrettjohnston.com

13       For the Defendants:

14                  ALEXANDER S. RIEGER  
15                  PABLO A. VARELA  
16                  Attorneys at Law  
17                  Office of the Attorney General  
18                  Public Interest Division  
19                  John Sevier Building  
20                  500 Dr. Martin L. King Jr. Blvd.  
21                  Nashville, TN 37243  
22                  (615)741-7069  
23                  alex.rieger@ag.tn.gov  
24                  pablo.varela@ag.tn.gov

25       - AND -

26                  JACOB R. SWATLEY  
27                  Attorney at Law  
28                  Harris|Shelton  
29                  6060 Primacy Parkway  
30                  Suite 100  
31                  Memphis, TN 38119  
32                  (901)525-1455  
33                  jswatley@harrisshelton.com

34       Also present:

35                  DOUGLAS HIMES

1  
2                   I N D E X  
3

4                   Page  
5

6                   Examination                                   5  
7                   By Mr. Rieger  
8

9                   E X H I B I T S  
10

11                   Page  
12

13                   Exhibit No. 1                           150  
14                   3/31/22 Affidavit of Doug Himes  
15

16                   Exhibit No. 2                           11  
17                   Notice of Deposition of Jonathan Cervas  
18

19                   Exhibit No. 3                           11  
20                   10/10/22 Report of Plaintiffs' Expert  
21                   Regarding Tennessee State Senate  
22                   Reapportionment  
23

24                   Exhibit No. 3                           101  
25

26                   Exhibit No. 4                           108  
27                   10/10/22 Report of Plaintiffs' Expert  
28                   Regarding Tennessee State House  
29                   Reapportionment  
30

31                   Exhibit No. 5                           139  
32                   12/2/22 Rebuttal Report of Plaintiffs'  
33                   Expert Regarding Tennessee State House  
34                   Reapportionment  
35

36                   Exhibit No. 6                           147  
37                   Expert Report of Douglas Himes  
38

39                   Exhibit No. 8                           149  
40                   3/29/22 Affidavit of Jonathan Cervas  
41

42                   Exhibit No. 9                           156  
43                   3/29/22 Affidavit of Jonathan Cervas  
44                   continued (Deposition Exhibit 8)  
45

1  
2           S   T   I   P   U   L   A   T   I   O   N   S  
3

4                 The deposition of JONATHAN R. CERVAS was  
5 taken by counsel for the Defendants, by Notice, at  
6 the offices of Barrett, Johnston, Martin & Garrison,  
7 LLC, 414 Union Street, Suite 900, Nashville,  
8 Tennessee, on December 13, 2022, for all purposes  
9 under the Tennessee Rules of Civil Procedure.

10               All formalities as to caption, notice,  
11 statement of appearance, et cetera, are waived. All  
12 objections, except as to the form of the question,  
13 are reserved to the hearing, and that said  
14 deposition may be read and used in evidence in said  
15 cause of action in any trial thereon or any  
16 proceeding herein.

17               It is agreed that Jerri L. Porter, RPR,  
18 CRR, Notary Public and Licensed Court Reporter for  
19 the State of Tennessee, may swear the witness, and  
20 that the reading and signing of the completed  
21 deposition by the witness is not waived.

1  
2                   \*       \*       \*

3                   JONATHAN R. CERVAS,  
4

5 was called as a witness, and after having been duly  
6 sworn, testified as follows:

7  
8                   EXAMINATION

9                   QUESTIONS BY MR. RIEGER:

10 Q               All right. Hi there, Mr. Cervas. My name is  
11 Alex Rieger and I'm with the Tennessee Attorney  
12 General's office. I just want to introduce myself  
13 and everyone in the room.

14               All the way at the far end, this is Pablo  
15 Varela. He's an assistant attorney general with our  
16 office. Next to him is Jacob Swatley, and he is  
17 with Harris Shelton in Memphis and he is our  
18 co-counsel in this case. I, again, am Alex Rieger  
19 with the attorney general's office. Next to me is  
20 Doug Himes, who is the chief ethics counsel for the  
21 General Assembly and I'm sure you've reviewed his  
22 expert reports when doing the rebuttal.

23               If I could, I'd like you to please introduce  
24 yourself, first and last name and address, please.

25 A               My home address?

1 Q Or your office address is fine.

2 A Okay. Jonathan Cervas. I'm a post-doctoral  
3 fellow at Carnegie Mellon University. The address  
4 there is 5000 Forbes Avenue, Posner Hall,  
5 Office 387.

6 Q Thank you. Now, I understand from your CV  
7 and your expert reports that you have testified  
8 before as a witness; is that correct?

9 A That's not true.

10 Q That's not true? Okay. You've served as an  
11 expert witness in those cases.

12 A I have never served as an expert witness.

13 Q You've never served as an expert witness,  
14 okay.

15 Have you ever taken a deposition before?

16 A No.

17 Q No? Okay. So, I'm going to go over some  
18 ground rules just to make sure that this process  
19 goes as smoothly and as efficiently as it can.

20 So, I want to note, just to explain from the  
21 start, the court reporter is here. She is going to  
22 take down everything that you and I say and anyone  
23 else in the room says. There may be times where we  
24 go off the record. When that happens, she will not  
25 be transcribing.

1           It's very important for us to make her job as  
2 easy as possible. So, we need to try not to talk  
3 over one another. If I cut you off -- and this will  
4 happen. If I cut you off, it's not intended. Just  
5 let me know. I'll apologize and I'll let you finish  
6 your answer. Similarly, please let me try to get my  
7 question out before you start answering, just so we  
8 can make sure that her life is easy.

9           Is that all right?

10          A        Yes. I think it helps that I don't feel very  
11 well, so...

12          Q        You've been doing so thus far, but if you  
13 could please answer each question with a clear,  
14 verbal response. Nodding or shaking your head won't  
15 get picked up. This isn't a video deposition, so  
16 yeses, nos, explanations, just very, very clear and  
17 verbal response will make the court reporter's job  
18 easier as well.

19           Is that all right?

20          A        Yes.

21          Q        Okay. If you don't understand a question --  
22 and again, this will happen. If you don't  
23 understand a question, and again this will happen,  
24 please let me know and I'll attempt to rephrase or  
25 re-ask it or explain it in a different way. But

1 otherwise, if you don't express that you don't  
2 understand the question, we'll all assume that you  
3 understood and that you answered the question.

4 Is that all right?

5 A I understand.

6 Q Okay. This is not an endurance sport. If  
7 you need to take a break at any point, please let me  
8 know and we can pause the proceeding. I may ask  
9 you -- if there's a question pending, I may ask you  
10 to answer it first. But any time that you need to  
11 take a break -- my preference is usually once an  
12 hour, just for five minutes or so, and then a little  
13 bit of a longer lunch break. But if you need a  
14 break in between that time, all you have to do is  
15 let me know.

16 Is that all right?

17 A That would be great.

18 Q Okay. I've got some questions that are a  
19 little bit unusual but they're routine and it's to  
20 make sure that the deposition is valid.

21 Have you had any alcohol or medication in the  
22 past 24 hours that would affect your ability to give  
23 accurate and truthful responses today?

24 A I have not.

25 Q Okay. Is there any other reason why you

1 might be impaired today and would not be able to  
2 truthfully or accurately respond to my questions?

3 A I'm fully functioning.

4 Q Excellent. What, if anything, did you review  
5 in preparation for today's deposition?

6 A I've only reviewed the set of reports that  
7 were filed by experts, including Mr. Himes, myself,  
8 and Mr. Trende.

9 Q And could you -- could you identify those  
10 documents one at a time for me --

11 A Sure.

12 Q -- just to make sure we get it for the  
13 record.

14 A Is there like a name that I should reference  
15 or just the titles?

16 Q The title would be great, thank you.

17 A So, affidavit of Jonathan Cervas, dated on  
18 March 29th, 2022; Affidavit of Doug Himes, dated  
19 March 31st, 2022; Report of Plaintiffs' Expert  
20 Regarding Tennessee State Senate Reapportionment,  
21 Jonathan Cervas, October 10, 2022; Report of  
22 Plaintiffs' Expert Regarding Tennessee State House  
23 Reapportionment, Jonathan Cervas, October 10th,  
24 2022; Expert report of Douglas Himes. I'm sorry, I  
25 don't see a date on this one.

1 Q There's only been one filed in this case, so  
2 that's fine.

3 A Okay. Expert report of Sean Trende, again no  
4 date; Rebuttal Report of Plaintiffs' Expert  
5 Regarding Tennessee State House Reapportionment,  
6 Jonathan Cervas, December 2nd, 2022.

7 I actually did not even open this one.

8 Q And that one is the transcript of Douglas  
9 Himes' deposition?

10 A Yes. Dated September 9th, 2022. But like  
11 I said, I did not even open that one.

12 Q Okay. Fantastic. If I could, at this time,  
13 I'm going to pass what has been premarked as  
14 Exhibit 2. So, Exhibit 2, which should be under  
15 Tab 2. Or above Tab 2. I apologize.

16 Are you familiar with that document?

17 A No.

18 MR. RIEGER: Okay. Then, just for  
19 identification purposes only, I'd like to mark and  
20 introduce the Notice of Deposition of Jonathan  
21 Cervas as Deposition Exhibit 2.

22 MR. TIFF: No objection.

23 / /

24 / /

25 / /

( WHEREUPON, a document was marked as  
Exhibit Number 2.)

BY MR. RIEGER:

Q If I could get you to flip to what is above Tab 3, are you familiar with that document?

A Yes. This is one of the ones I had read to prepare for this deposition.

Q            And what is that document?

A This is the Report of Plaintiffs' Expert  
Regarding Tennessee State Senate Reapportionment.

MR. RIEGER: At this time I would like to introduce this as Deposition Exhibit 3.

MR. TIFT: No objection.

( WHEREUPON, a document was marked as  
Exhibit Number 3.)

BY MR. RIEGER:

Q All right. I'd like to start here. If I could get you to flip to Appendix A of that document.

A (Witness complies.)

Q            Do you recognize that?

A This is my CV, revised in October 2022.

Q        Okay. Does that CV fully and accurately describe your educational background?

A It's been updated since then to include

1 another additional publication in the Law Review,  
2 but other than that, it is accurate.

3 Q And what is the name of that publication?

4 A It's still -- it's a working paper that will  
5 be forthcoming in the New Hampshire Law Review  
6 titled -- I don't -- I'm sorry, I don't know the  
7 exact title of the paper.

8 It's something along the lines of "Can State  
9 Courts Police Party Gerrymandering," or some  
10 variation of that.

11 Q And could you describe the content of that  
12 working paper?

13 A That paper just looks at all of the court  
14 cases in state courts regarding partisan  
15 gerrymandering, starting in 2010 cycle and  
16 continuing on through this current cycle of  
17 redistricting, looking at which courts have seen  
18 litigation and how that litigation resulted, ending  
19 in November of 2022.

20 Q To the best of your knowledge, did that  
21 working paper include any discussion regarding the  
22 state of Tennessee or its electoral maps?

23 A As far as I understand, there's no court case  
24 involving partisan gerrymandering in Tennessee.

25 Q Does anything else need to be added to your

1 CV besides that working paper?

2 A Just to clarify, actually, I do have this  
3 listed as in progress, that paper I just referred  
4 to. But it is in progress and it will be published  
5 in a forthcoming issue. And I think the name has  
6 changed on that paper since then. The final name of  
7 the paper may also change.

8 Q Okay.

9 A Other than that, I don't think there's  
10 anything that has changed. There's several more  
11 invited talks that I've added since then. My  
12 current CV is always updated on my personal website.

13 Q And that personal website is the same one  
14 reflected on the first page of your CV,  
15 jonathancervas.com?

16 A That's right.

17 Q All right. If I could, I'd like to start  
18 with your employment on the first page.

19 A Sure.

20 Q So, it starts by saying from 2020 to the  
21 present that you're a post-doctoral fellow at  
22 Carnegie Mellon University.

23 Is that still accurate?

24 A Yes, sir.

25 Q Can you describe that for me?

1 A I'd love to. My work at Carnegie Mellon  
2 includes -- it's a post-doctoral teaching fellow. I  
3 teach three classes for the Institute of Politics  
4 and Strategy. I taught a class last semester, a  
5 graduate class on American politics and in the  
6 spring semester I'll teach two classes. One of them  
7 is called voting rights and representation. That is  
8 an undergraduate class. And the other class is an  
9 advanced methodology class in data analysis.

10 Q Tell me a little bit about your American  
11 politics class. What exactly is covered by that?

12 A It's a seminar class and the point is to  
13 introduce master's students to a broad range of  
14 topics involving American politics. And that ranges  
15 from everything from our political institutions to  
16 political polarization, political behavior,  
17 political participation, and various other topics.

18 Q Does that class discuss redistricting at all?

19 A Actually, we have one class at the very end  
20 of the semester on election law, and there was one  
21 paper from an annual review of political science on  
22 partisan gerrymandering that was assigned. Beyond  
23 that, there was basically zero discussion.

24 Q What do you talk about during that one class?

25 A I don't think we actually did talk about it

1 because there were other things going on in the  
2 world that were more pressing in this last class of  
3 the semester. So, we talked about the 2022 midterm  
4 election and other various topics. Unfortunately,  
5 with classes, sometimes, especially at the end, you  
6 fall behind and you can't get to all of the  
7 material.

8 Q So, could you describe a little bit more the  
9 paper that you referenced?

10 A The one that I assigned?

11 Q Correct.

12 A It's a paper written by Eric McGee. It's an  
13 annual review of political science, which is  
14 intended to be a broad overview of some subfield of  
15 the discipline. And so, it talks about everything  
16 from the beginning of time to whatever was the most  
17 current at the time the article was written, which  
18 the article is now a few years old.

19 Q Does it discuss redistricting at all in  
20 detail, and if so, how?

21 A I can't recall the contents of this paper in  
22 full. It's one of, you know, 40 that I read over  
23 the course of the semester. And I don't think it  
24 talks about redistricting, specifically  
25 redistricting.

1           I know it does talk about measures of  
2 partisan gerrymandering, because the article is  
3 about partisan gerrymandering. So, it includes  
4 references to things like the efficiency gap and  
5 partisan symmetry.

6 Q         Can you discuss your voting rights and  
7 representation class for us?

8 A         I can kind of broadly tell you what it might  
9 be about since it hasn't been taught yet and I have  
10 to finish the syllabus.

11           But the -- in past iterations I've talked  
12 from a book called "The Right to Vote." It's a very  
13 good book by Alexander Keyssar at Harvard University  
14 Law School, that goes through the history of voting  
15 rights in the United States.

16           And then, there will be a section about  
17 representation, which is -- I'm forgetting the name  
18 of the author of the textbook, but it talks about  
19 what it means to be represented in America.

20           And the third part of the class is about  
21 redistricting. And I'll teach from the National  
22 Conference of State Legislatures' red book.

23 Q         Do you an -- I know it's still early and that  
24 you haven't created a syllabus yet, but do you  
25 anticipate teaching on or about the Tennessee maps

1 at issue in this case?

2 A I have no plans to do that.

3 Q And could you describe the advanced  
4 methodology course that, again, I believe is in  
5 planning, but just what you anticipate.

6 A That one is even in a more preliminary stage.  
7 I've never taught this class. I'm not even sure  
8 what textbook I'll use.

9 It is intended for master's level students  
10 to -- to understand methodology used by political  
11 scientists beyond OLS, ordinary least squares  
12 regression.

13 Q And can you explain the concept of ordinary  
14 least squares for us?

15 A Regression analysis is a traditional  
16 methodology that is used to make inferences about  
17 various variables of interest. We can use them for  
18 various purposes.

19 But ordinary least squares is just a -- it's  
20 a methodology for understanding patterns and data.

21 Q And what -- so, I assume that -- am I correct  
22 that each of these classes falls within a certain  
23 department?

24 A I teach classes for the Institute of Politics  
25 and Strategy, which is the degree granting unit at

1 Carnegie Mellon for political science. My students  
2 don't necessarily come from that -- our major. They  
3 may come from other departments. I often get  
4 computer science students and engineering students.

5 Q How do -- do the topics covered in your  
6 planned -- or do the topics that you plan to cover  
7 in your advanced methodology course, do they -- are  
8 they intended to be applicable to redistricting?

9 A Let me clarify. On that class, that's only  
10 master's students in our department for that class.

11 Q Okay.

12 A And there will probably be little or no  
13 application to redistricting in that class. The  
14 students that take our master's program have no  
15 interest in redistricting.

16 Q Okay. Have you ever taught any other courses  
17 in your career?

18 A No.

19 Q And besides teaching those courses, what  
20 else -- what else do you do as a post-doctoral  
21 fellow?

22 A My -- as far as my work at Carnegie Mellon, I  
23 have no service requirements for the department. I  
24 do occasionally, you know, serve as mentor to  
25 undergraduate or graduate students. But there's no

1 requirement for those things.

2 My time is supposed to be split between  
3 teaching and doing independent research.

4 Q And what -- could you describe your -- will  
5 you describe the independent research you've done at  
6 Carnegie Mellon.

7 A My CV, which is part of Exhibit 3, and at  
8 other places, describes my published work, which is  
9 what I do in my free time that is directly related  
10 to my job at Carnegie Mellon.

11 Q Is there anything that would not be -- is  
12 there any facet of your independent research at  
13 Carnegie Mellon that would not be reflected in  
14 your CV?

15 A No. I can't think of anything.

16 Q Okay. All right. I'd like to move on to the  
17 next item, which is from 2021 to present, the  
18 Pennsylvania Reapportionment Committee work.

19 A Sure.

20 Q Could you describe that for us.

21 A Yes. I was -- so, the Pennsylvania  
22 Reapportionment Committee happens once every  
23 ten years for redistricting. And it is a committee  
24 made up of the majority leader and the minority  
25 leader of the Pennsylvania State Senate and the

1 majority leader and minority leader of the  
2 Pennsylvania House of Representatives.

3           Collectively, those four members are to  
4 select a chairperson. If they fail to choose a  
5 chair, the Pennsylvania Supreme Court appoints a  
6 chair.

7           That's exactly what happened in this cycle.  
8 And the person appointed to that position was the  
9 former chancellor of the University of Pittsburgh,  
10 Mark Nordenberg. Mark Nordenberg, in his capacity  
11 as chair, was tasked with hiring staff and he was  
12 recommended my name and contacted me about the  
13 position. I interviewed with him and ultimately was  
14 hired to serve as a redistricting consultant.

15           That lasted for several months, included  
16 dozens of hearings with citizens and negotiation to  
17 adopt the map, which resulted in a rare bipartisan  
18 vote to adopt a plan that was unanimously affirmed  
19 by the state Supreme Court.

20 Q           And as map consultant to the commission, what  
21 were your primary job responsibilities?

22 A           I had many responsibilities, including to  
23 inform the chair and other members about the process  
24 of redistricting, to prepare data analysis based on  
25 census data, to understand where population loss

1 required significant changes to existing districts.

2           I consulted in ensuring compliance with state  
3 and federal law and helped in any way I could to  
4 either the chair or to legal counsel regarding  
5 redistricting in Pennsylvania.

6 Q         Did you draft any maps as part of your job  
7 with the reapportionment committee?

8 A         I was a part of drafting the maps, both for  
9 the House of Representatives and for the state  
10 Senate. But they, to clarify, were not my maps.  
11 They're the commission's maps.

12 Q         Of course, of course.

13           Did you draft any maps in that role that were  
14 not ultimately adopted to become the commission's  
15 maps?

16 A         I never drafted a map from scratch for either  
17 the House of Representatives or for the Senate. We  
18 toyed with ideas in particular districts, but it was  
19 a negotiation. And, of course, that work is highly  
20 confidential.

21 Q         So, you said you didn't draw the maps from  
22 scratch. At what point would you start? Could you  
23 describe the starting point, if that makes sense.

24 A         So, again, as I described the Pennsylvania  
25 Reapportionment Commission, it was a bipartisan

1 commission. And the teams, the majority leaders,  
2 the majority leaders of both chambers had their own  
3 sets of lawyers and their own sets of demographers  
4 who serve as mapmakers.

5 And each of those teams presented ideas and  
6 drafted maps that were delivered to the chair, which  
7 I would then analyze and give feedback to the chair  
8 on. And then we would give feedback on those to the  
9 parties.

10 Q What sort of data analysis would you perform  
11 in that role?

12 A It depends on at which point in the process.  
13 Early on, it was a lot of census data, showing where  
14 population loss was greatest or population gain was  
15 greatest.

16 Pennsylvania had a fairly stagnant population  
17 over the course of the decade, but regionally it had  
18 fairly significant malapportionment. And later, it  
19 involved measures of partisan bias.

20 Q Just for the record, can you describe your  
21 understanding of the concept of malapportionment.

22 A Malapportionment, as I understand it, is when  
23 districts have populations that are outside the  
24 bounds that are legally -- legally allowed by the --  
25 by the U.S. Supreme Court's decisions in cases after

1 Baker versus Carr.

2 Q When you were performing data analyses in  
3 that role, did you use any specialized software?

4 A For data analysis in Pennsylvania?

5 Q Yes.

6 A I had a license from Maptitude for  
7 Redistricting, with data from Pennsylvania, and we  
8 used Dave's Redistricting app. And that's basically  
9 it. I may have made some spreadsheets in Excel.

10 Q Did you have any staff in that role?

11 A I did not have any staff, personally.

12 Q Did you have anyone assisting you in doing  
13 the data analyses?

14 A No.

15 Q Okay. Approximately how many maps did you  
16 perform data analyses for?

17 A I don't think I could even estimate that. At  
18 various times the parties would deliver maps to us,  
19 perhaps once a day, perhaps multiple times a day.

20 Q So, would you --

21 A And oftentimes, by the way, they're small  
22 changes to the maps.

23 Q So, even including -- sorry. Strike that,  
24 please.

25 So, excluding any small changes, do you think

1 you reviewed and did data analyses for more than a  
2 hundred maps or less?

3 A Well, we also performed some very primitive  
4 types of analyses on user -- or citizen-submitted  
5 maps, but we're talking very -- a relatively small  
6 number of those.

7 And I would say that it was far less than a  
8 hundred maps that were delivered by the parties that  
9 were -- had any sufficient -- significant  
10 differences.

11 Q Would you say -- and again, if you don't  
12 know, it's fine to say you don't know. But would  
13 you say more than ten?

14 A Different, like completely different maps?

15 Q Maps that did not have just very, very minor  
16 changes.

17 A I would put it around a dozen.

18 Q Around a dozen, okay.

19 A And that might be a little bit generous. It  
20 might not have been -- it depends on what you define  
21 significant changes.

22 Q Did any of the maps that you did data  
23 analyses for, were any of them flawed?

24 A I really don't think I can speak to the  
25 private nature of the communications of the state

1 legislature's commission.

2 Q Perhaps you can give me a yes or no to avoid  
3 going into that. Did any of them, between the  
4 citizen maps and the legislature maps, were any of  
5 them flawed as a matter of constitutional or  
6 statutory law?

7 A Okay. So, hmm. The citizen maps may have  
8 had -- may not -- the citizens may not have  
9 understood the law as well as, say, the demographers  
10 and lawyers for the parties. So, very clearly,  
11 those maps would not meet the requirements of  
12 federal and state law. The maps by the parties  
13 would likely, in most cases, comply with federal and  
14 state law.

15 Q Were you familiar with Pennsylvania's  
16 electoral landscape before you took the job or did  
17 you have to learn it when you got there?

18 A I'm still not sure I'm familiar with  
19 Pennsylvania's political landscape today. I was  
20 born and raised in Pennsylvania. I lived there  
21 for -- I've lived there for approximately 15 years.  
22 So, I'm not unfamiliar with Pennsylvania.

23 Q Okay. Before -- when you were -- when you  
24 were performing data analyses for maps in  
25 Pennsylvania and reporting on compliance with state

1 and federal law, what precisely were you looking  
2 for, both in terms of state and federal  
3 requirements?

4 A Again, I'm not so sure how well I can answer  
5 this question. You know, this is a vague memory,  
6 the intricacies of what we looked at over a year ago  
7 on plans.

8 But, you know, certainly ensuring that they  
9 comply with one person, one vote is the most  
10 important first step in ensuring a plan is compliant  
11 with law. And then, beyond that, it probably would  
12 depend on the circumstance of the plan.

13 In the analysis of the plans that were  
14 submitted by citizens, there's a public portal in  
15 which we submit -- we added data to that counted the  
16 number of county splits, the average population  
17 deviation, and some other basic descriptive  
18 statistics of the plans.

19 Q Did Pennsylvania, to your recollection, did  
20 it have any unusual specific state requirements?

21 A I don't know about unusual. Every state has  
22 requirements about redistricting or almost every  
23 state has requirements. They differ in their  
24 language.

25 But the Pennsylvania requirements are quite

1 familiar to most states that are what we consider  
2 traditional redistricting criteria.

3 Q I'm sorry. Did you have more?

4 A I was going to say, the one that required the  
5 most focus was a requirement that no county be split  
6 unless absolutely necessary.

7 Q Okay. Was there any requirement in  
8 Pennsylvania or any -- strike that, please.

9 Was there any requirement in Pennsylvania to  
10 maintain prior cores?

11 A No.

12 Q Okay. Was that any -- beyond requirements,  
13 were there any other best practices guidelines that  
14 you followed as part of your data analyses in  
15 ensuring compliance in the other job  
16 responsibilities of that role?

17 A I'm not sure how to answer your question.

18 I'm sorry.

19 Q Okay. Besides the -- we've talked about, you  
20 know, that you did data analyses and that you worked  
21 to ensure compliance with state and federal law.  
22 That was one of the things you were tasked with  
23 double checking, essentially.

24 Were there any other best practices or  
25 informal guidelines that you attempted to make sure

1 that the draft maps reflected?

2 A Different members of the commission had  
3 different priorities. Some preferred to protect  
4 their members, others may have had other. But none  
5 of that was officially analyzed in any capacity.

6 There's no requirement in the Pennsylvania  
7 Constitution to preserve the cores. There's no  
8 requirement in the Pennsylvania Constitution to  
9 protect incumbents, nor are there prohibitions on  
10 doing those things.

11 So, that was up to the discretion of the  
12 members and their own preferences. And they  
13 negotiated their own maps and I helped to, you know,  
14 ensure that the maps were compliant in all  
15 constitutional ways.

16 Q So, in your role with the Pennsylvania  
17 Reapportionment Committee, you did not -- am I  
18 correct in saying that you did not review for prior  
19 cores or incumbent pairings?

20 A We do have -- we did look at whether  
21 incumbents were paired.

22 Q Okay.

23 A Because it was a priority of the members who  
24 represent caucuses in Pennsylvania. But the core  
25 stuff is not something I've ever -- that was ever

1           brought up.

2       Q       Okay.

3       A       Reapportionment, by definition, is changing  
4           the cores.

5       Q       Okay. So, if I could -- sorry.

6                 In your role with the Pennsylvania  
7           Reapportionment Committee, did you utilize -- I know  
8           we talked about software, but did you utilize any  
9           other authoritative sources to guide your  
10          performance of your job responsibilities?

11       A       Can you define what you mean by that?

12       Q       Any sort of treatises, books, other  
13          documents, anything that would inform how you would  
14          do your job.

15       A       We -- I worked a lot with the NCSL's red law  
16          book, which is an excellent source for information  
17          on redistricting. I use it in my course, as I  
18          mentioned earlier. That would be the primary guide.  
19          And then, of course, state and federal law and  
20          opinions in lawsuits.

21       Q       Do you recall reading any specific cases or  
22          decisions?

23       A       Yes. We were focused a lot on League of  
24          Women Voters versus Pennsylvania.

25       Q       And could you describe the holding in that

1 case or what that case was about?

2 A That case was regarding the Pennsylvania  
3 congressional redistricting plan developed by the  
4 legislature in 2011. The holding overturned that  
5 plan based on the free and equal protection clause  
6 of the Pennsylvania Constitution, that it  
7 violated -- that violated that protection in the  
8 constitution, as interpreted by the Pennsylvania  
9 Supreme Court.

10 Q And because I have not asked this question  
11 yet and I want to make sure for the record. In your  
12 role with the reapportionment committee, you were a  
13 map consultant to the commission for a state House,  
14 a state Senate, and a congressional map.

15 A No.

16 Q Okay.

17 A Our task for the commission was only to  
18 develop the plan for the state Senate and the state  
19 House of Representatives. The congressional map was  
20 under the authority of the state Legislature.

21 Q Okay. Did you review -- even though it was  
22 not part of your job responsibilities, did you ever  
23 review Pennsylvania's congressional map?

24 A Yeah. I mean, I've written papers about  
25 Pennsylvania congressional districting. So, the

1       2011 plan was the subject of analysis of one of the  
2       papers. And we followed along while the legislature  
3       was developing plans and the court cases that were  
4       being held simultaneous to our own process.

5                  Though the decisions from the court on the  
6       congressional maps were delivered very, very late in  
7       our process, I believe, though I'm not 100 percent  
8       sure, that it was -- the opinion of the Court was  
9       delivered after our final plan was already passed.

10      Q        Okay. All right. Was there anything else of  
11       note that we haven't discussed that was a job  
12       responsibility that you performed with that  
13       committee?

14      A        It's listed under my current employment  
15       because we are still -- we're still a commission and  
16       we have to write a final report still.

17                  And the only other thing I will note is that  
18       our plan was challenged at the U.S. Supreme Court  
19       and I provided assistance to our legal team in  
20       writing the response -- I think that's what it's  
21       called, excuse me if I'm wrong -- to the writ of  
22       certiorari.

23      Q        Okay. All right. If I could, I'd like to go  
24       to your "Education" section, if that's all right.

25      A        Sure.

1 Q Just for planning purposes, I think we're  
2 going to try to get through education and then take  
3 a break.

4 So, I notice first that at the University of  
5 California, Irvine, you have both a master's and a  
6 Ph.D. listed. Would you describe those for me?

7 A It's pretty standard that in a Ph.D. program  
8 that at some point you are awarded a master's degree  
9 based your coursework. So, there's no -- there's  
10 nothing special about getting a master's degree if  
11 you get a Ph.D. It's just a matter of filling out  
12 the paperwork to receive that degree.

13 Q As part of your master's degree, did you  
14 receive any education or do any sort of independent  
15 research regarding redistricting?

16 A As part of the master's --

17 Q As part of your master's curriculum.

18 A Master's curriculum is no different than the  
19 Ph.D curriculum. Just to be clear, it's the same  
20 program. It is automatically awarded.

21 Q Okay. Then, could you describe the content  
22 of your Ph.D. --

23 MR. RIEGER: Actually, let's go ahead  
24 and break, if that's all right. Let's take a fiver.

25 (Recess observed.)

1 BY MR. RIEGER:

2 Q I'll ask this question frequently. You do  
3 understand that you're still under oath?

4 A Yes.

5 Q And that all of the rules and guidance we  
6 discussed earlier is still in effect, right?

7 A Yes, sir.

8 Q Okay, great.

9 Could you describe your Ph.D. in political  
10 science from University of California, Irvine.

11 A I think it's a fairly standard Ph.D. program  
12 where there's a requirement to take a certain  
13 curriculum of classes that span multiple subfields.  
14 You can have some choice on which classes you take.  
15 There is other sort of requirements of the  
16 department as far as methodology and number of  
17 subfields.

18 My primary subfields were American politics,  
19 comparative politics, and methods. And my Ph.D.  
20 adviser was Bernard Grofman. My dissertation, as is  
21 in my CV, is "A Quantitative Assessment of the U.S.  
22 Electoral College from 1790 to 2020."

23 Q Where it says "Dissertation Committee," are  
24 those just the names of the committee members who  
25 were charged with reviewing your dissertation?

1 A That's exactly right. They have -- in order  
2 to -- in order to receive your Ph.D., a committee of  
3 faculty has to approve your dissertation. It's a  
4 committee of three people and the three people were  
5 Bernard Grofman, who was the chair; Michael Tesler;  
6 and Carole Uhlaner.

7 Q Could you describe your dissertation for me.

8 A Yes. It's a three-part dissertation based on  
9 three articles that are -- that I published in  
10 peer-reviewed journals listed under "Publications"  
11 on my CV.

12 The first one is "Why noncompetitive states  
13 are so important for understanding the outcomes of  
14 competitive elections: The Electoral College." The  
15 point of that part of the dissertation is that  
16 there's a misconception that only competitive states  
17 are important, but I think that's a fundamental  
18 misunderstanding, that without -- without the  
19 noncompetitive states, you can't -- you cannot win  
20 the Electoral College. So, they are equally  
21 important, if not more important.

22 The second paper in the dissertation was "Are  
23 Presidential Inversions Inevitable? Comparing Eight  
24 Counterfactual Rules for Electing the U.S.  
25 President."

1           This section of the dissertation is  
2 quantitative analysis that shows that under various  
3 rules for counting electors, besides the one that  
4 we -- that is primarily used, where the plurality of  
5 winner in a state receives 100 percent of the  
6 electors from the state, that under almost every  
7 other way of counting electors, that you still have  
8 situations in which the candidate who wins the  
9 popular vote may not actually win the Electoral  
10 College.

11           Excuse me, but I'm not actually sure -- I  
12 don't remember exactly what the final chapter of the  
13 book was. I believe it was the paper titled --  
14 listed as Number 5 on my CV as "Legal, political  
15 science, and economic approaches to measuring  
16 malapportionment."

17 Q           So, for each of those three, I note that  
18 Bernard Grofman was a co-author. Is that correct?

19 A           That's correct.

20 Q           Who -- what was his role as co-author?

21 A           His role as co-author depends upon the paper.  
22 On the three of those papers, I was the primary  
23 author, hence why it was my dissertation.

24           On other articles, he has been the lead  
25 author, meaning that he either did the first draft

1 of the paper or was primary. And so, in the  
2 situations in which I'm listed as first author, I  
3 wrote the first draft and did all of the data  
4 analyses.

5 But we have a collaboration. As you'll see  
6 throughout my CV, he and I collaborate on pretty  
7 much every piece of work I do.

8 Q Okay. Why does he collaborate on every piece  
9 of work that you do?

10 A Why does he?

11 Q Yes.

12 A Well, I collaborate with him because he's  
13 brilliant.

14 Q How so? What are his fields?

15 A Bernard Grofman, or Bernie, as I call him, or  
16 as he's often referred to, is probably the most  
17 well-known expert in academia on the field of  
18 redistricting.

19 He was the expert witness in a very, very  
20 important court case, *Gingles versus Thornburg*, and  
21 has probably published upwards of over a hundred  
22 articles on the subject of redistricting.

23 He has served as special master in various  
24 states and is regarded as a neutral academic thinker  
25 in this field. Or in that field of redistricting.

1 Q And to your knowledge, is he still at  
2 University of California, Irvine?

3 A I know factually that he is still at  
4 University of California, Irvine, though he is in  
5 his final semester as a non-retired person.

6 Q Do you have any plans to do any more  
7 publications with him?

8 A We have about 30 working papers currently.

9 Q Do you recall any of the specifics of those  
10 working papers?

11 A Some of them are far-along papers and some of  
12 them are sort of ideas for papers we might write.  
13 They're on various topics. They split, generally,  
14 on the lines of either in the field of redistricting  
15 or on the Electoral College, with some on just  
16 American politics more generally, American  
17 elections, or Congress.

18 Q Are any of these working papers reflected in  
19 your CV?

20 A There are -- yeah, there are -- I have a list  
21 of several papers on the CV. Some of them are under  
22 review currently, so they may end up being published  
23 under peer review, and some of them are, like I  
24 said, still in working -- working order.

25 I mentioned one that's listed under

1 "In Progress" that has already been accepted at the  
2 New Hampshire Law Review.

3 I'm sorry, was there more to the question?

4 Q No, no. Let me re-ask it.

5 To your knowledge, are any of the working  
6 papers not listed in your CV?

7 A Oh, yes. I mean, we have, like I said,  
8 dozens of papers that are maybe fragments of ideas,  
9 maybe just single sentences that haven't elevated to  
10 the point where I would list it on a CV.

11 Q Do any of those deal with redistricting?

12 A Yes. Many of our -- all of our working  
13 papers are either going to be about Electoral  
14 College, redistricting, or some aspect of American  
15 politics.

16 Q If you recall, can you list -- sorry. Strike  
17 that.

18 If you recall, can you describe any of the  
19 working papers that aren't in your CV that deal with  
20 redistricting?

21 A I'm actually not sure, to be honest, if there  
22 are any papers that are not listed on this part of  
23 the CV that I would consider a working paper on the  
24 topic of redistricting.

25 Most of the ones that are not listed are

1 ideas about American elections, particularly after  
2 the 2022 midterm elections and how that affects our  
3 understanding of American politics.

4 Q Are there any ideas on the subject of  
5 redistricting that you have that you don't include  
6 in your definition of working paper?

7 A Can you ask that one more time, please?

8 Q Sure. And let me take a step back and maybe  
9 the context will explain the question better.

10 So, you said -- you described that you didn't  
11 have any that were about redistricting that you  
12 could recall that were working papers. I just want  
13 to make sure that there's nothing outside that  
14 definition of working paper that deals with  
15 redistricting that you can think of.

16 A Not that I can think of. We talk about --  
17 well, I talk with Dr. Grofman approximately several  
18 times a week, and often in those phone calls we  
19 discuss ideas. As I said, I'm not sure I would call  
20 those working papers.

21 What he has in his files as working papers, I  
22 say -- when I said 30, I take that from his words.  
23 He keeps files of -- a file system of all of our  
24 ideas. I'm not sure what he includes in that 30.  
25 As I prepare things, I try to list them in my CV.

1 Q Okay. If we could start with the first  
2 chapter of your dissertation, which I believe is --  
3 I apologize, we're going to skip around a little  
4 bit -- which I believe is Item Number 1 under  
5 "Publications."

6 Is that the first chapter of your  
7 dissertation?

8 A I'm sorry, I don't remember the order of the  
9 dissertation or the chapter numbers. I haven't  
10 looked at my dissertation in approximately  
11 three years and don't intend to for another 30, if I  
12 can help it.

13 The dissertation is these three articles plus  
14 an introduction and a conclusion, I believe. But  
15 essentially it's set up as the three articles. And  
16 it may be one, but it may have been ordered  
17 differently. That was the first one that was  
18 actually published in a peer-reviewed journal.

19 Q Okay. So, for Item Number 1, then, which, if  
20 I'm understanding correctly, is part of your  
21 dissertation but you don't know the order in which  
22 it falls in your dissertation, did that particular  
23 article discuss redistricting?

24 A No.

25 Q Moving on to the -- I believe it's Item

1 Number 3.

2 A Yes.

3 Q To the best of your recollection, is that

4 a -- is that article part of your dissertation?

5 A That is.

6 Q Okay. Does that article deal with

7 redistricting at all?

8 A It does not.

9 Q Okay. And then, I believe the last is Item

10 Number 5. Is that, to your knowledge, one of the

11 chapters in your dissertation?

12 A As I recall, that was one of the chapters.

13 Q Okay. And that is "Legal, political science,

14 and economics approaches to measuring

15 malapportionment"?

16 A Yes.

17 Q Am I correct in assuming that that has to do

18 with redistricting?

19 A Yes. Though, just to clarify, it's actually

20 about the Electoral College, but it uses the

21 measures of redistricting to analyze the Electoral

22 College.

23 Q And what are those measures of redistricting?

24 A Well, it would be the measures of

25 malapportionment and other measures of ways we might

1 think about inequality, since malapportionment is  
2 type of inequality of voter power. And so, we look  
3 at -- it's not actually about redistricting, the  
4 paper. It's about the Electoral College, Congress,  
5 both chambers of Congress.

6 And so, we analyze, say, the U.S. House of  
7 Representatives in terms of overall deviation or  
8 average deviation or a Gini index of equality and  
9 maybe some other several different ways of thinking  
10 about inequality, in looking at whether our  
11 U.S. political institutions treat voters differently  
12 based on where they live.

13 Q Could you describe for the record the index  
14 of equality?

15 A The Gini index of equality?

16 Q Yes, please.

17 A The Gini index is a measure that comes from  
18 economic literature from the early 1900s, and it is  
19 measured -- it's a measurement that has an outcome  
20 between zero and one, with zero -- I believe I've  
21 got the scale right. It could be inverse. But zero  
22 being the most equal distribution, so everybody has  
23 the same amount of something, and one being the most  
24 unequal, where one person has everything and  
25 everybody else has nothing.

1           Usually, the Gini index is used to calculate  
2 income inequality, but we use it in this paper to  
3 measure political power inequality.

4 Q           And can you just -- just to make sure I've  
5 got a grasp on that article -- I'm sorry. Strike  
6 that.

7           To your knowledge, had anyone used the Gini  
8 index of equality before in measuring?

9 A           In measuring redistricting?

10 Q           Yes.

11 A           Not to my knowledge.

12 Q           Okay. Where did you get the idea?

13 A           As I said, it was -- economics uses this  
14 measure of equality and I thought if we're going to  
15 measure equality that we might think of other ways  
16 to measure equality. I don't think there's any more  
17 to it than I thought it was an interesting way to  
18 measure equality.

19 Q           When did the -- when did you first become  
20 acquainted with the index of equality?

21 A           I read a lot of literatures from disciplines  
22 and the Gini -- like I said, the Gini index was  
23 invented sometime in the early 1900s and is widely  
24 used in economics.

25 Q           So, do you believe that you first learned

1 about the concept in an article?

2 A Or a book on economics or maybe a lecture on  
3 economics. I can't be sure when I first learned  
4 something.

5 Q Okay. Did your -- sorry.

6 Did that article that we're discussing, which  
7 is Number 5 under "Publications," did that article  
8 deal at all with the concepts of one person, one  
9 vote, county splits, anything like that?

10 A It would not have dealt with the concept of  
11 county splits because it was about malapportionment  
12 and not about redistricting. So, if you're  
13 talking -- it was all state level, so it would have  
14 been about state boundaries mostly, Electoral  
15 College, or congressional district boundaries.

16 Does that answer the question?

17 Q Yes. But I want to follow up a little bit  
18 about that.

19 Did that article attempt to evaluate -- I'm  
20 sorry. Strike that.

21 Did that article discuss any other state and  
22 federal redistricting requirements?

23 A Beyond one person, one vote?

24 Q Yes.

25 A I don't believe so.

1 Q Okay.

2 A And just one more clarification. The title  
3 of the paper is "Legal, political, and economic  
4 approaches to measuring malapportionment." So, the  
5 Gini is the economic approach. The legal approaches  
6 would have been the overall deviation, total  
7 deviation, and average deviation.

8 Q And what would have been the political  
9 science portion of that?

10 A Honestly, I don't remember.

11 Q Okay. And I'd like to discuss your fields  
12 that you have listed under your Ph.D. So, I'd like  
13 to start with American politics. Can you just  
14 describe that for us.

15 A The field of American politics?

16 Q Yes.

17 A I just did a whole semester on this and it's  
18 really complicated. But American politics, as I  
19 define it, is anything that relates to the American  
20 political institution or behavior. It's a subfield  
21 of political science that has existed for a very  
22 long time.

23 Political science is divided into multiple  
24 subfields. The discipline is usually thought of as  
25 American politics, comparative politics,

1 international relations, and then sometimes we'll  
2 include political methodology as a separate  
3 subdiscipline.

4 Q So, as part of the field of American  
5 politics, was there any coursework dealing with  
6 redistricting?

7 A Probably -- I didn't take any classes on  
8 redistricting. Nobody offered a course at the  
9 University of California, Irvine. So, the only work  
10 I did regarding redistricting while I was in  
11 graduate school would have been my work directly  
12 with Professor Grofman. Typically, that was  
13 involved in federal court cases in which he was  
14 named the special master and I worked for him as  
15 assistant to the special master.

16 Q And are all of the times you worked as  
17 assistant to the special master reflected under work  
18 experience on your CV on Page 3?

19 A Yes. I served in three court cases, all of  
20 which are listed on my CV.

21 Q Okay. And each time, was that during your  
22 graduate education with Professor Grofman?

23 A Yes. I was still in grad school for each --  
24 while each of those cases was happening.

25 Q And each was with -- each case, the special

1 master was Dr. Grofman?

2 A Dr. Grofman was the special master in each of  
3 those cases, yes.

4 Q Okay. Moving on to the next item in your  
5 education, University of Nevada, Las Vegas, B.A. in  
6 political science. Did you receive any training or  
7 education or take any classes on redistricting while  
8 there?

9 A Unfortunately, I don't think most places  
10 offer classes like that, which is, I think, a shame.  
11 But no.

12 Q Moving on to "Additional Training," can you  
13 describe the "Workshop on Research Design for Causal  
14 Inference"?

15 A Sure. It was a weeklong, fairly intense  
16 conference or workshop, eight hours a day for  
17 five days, where leading experts from statistics  
18 taught us methods of causal inference.

19 Q Was anything learned in that workshop  
20 applicable to redistricting?

21 A Completely unrelated to redistricting.

22 Q Okay. The next one, "Inter-University  
23 Consortium for Political and Social Research," can  
24 you describe that for me.

25 A Yes. That was a monthlong program at the

1 University of Michigan that teaches either graduate  
2 students or young assistant professors advanced  
3 methodology skills that is hard to learn in your  
4 home Ph.D. programs, because oftentimes they're not  
5 offered.

6 Q Did anything that you learned at that  
7 training -- sorry. Strike that.

8 Was anything that you learned at that  
9 training applicable to redistricting?

10 A I would say, generally, probably yes, because  
11 it was courses on things like regression techniques,  
12 which, broadly speaking, might relate to  
13 redistricting, but not specifically.

14 Q Okay. Was anything in that course applicable  
15 or useful to determine a map's compliance with state  
16 and federal requirements for redistricting?

17 A No, there was no legal training at either of  
18 those workshops listed on my CV.

19 Q Okay. So, let's move on to "Publications,"  
20 if we could. And let's start with Item Number 2 on  
21 the second page. Can you describe that article for  
22 us.

23 A Sure. I'm listed as second author on that  
24 paper, as I described earlier, meaning I had a less  
25 influential role in the publication.

1           That paper looks at the court case in  
2 Pennsylvania, League of Women Voters versus the  
3 Commonwealth, and describes the Court's findings and  
4 talks about how other states might take note of what  
5 Pennsylvania did in interpreting their Constitution  
6 to prohibit partisan gerrymandering.

7 Q           So, besides partisan gerrymandering, did that  
8 article discuss any other state and federal  
9 requirements such as one person, one vote or the  
10 VRA?

11 A           Oh, I can't remember the specifics of the  
12 article. I would find it hard to believe that those  
13 things would not be mentioned at all in an article  
14 of this kind, but I don't remember specifically  
15 whether we wrote about those concepts.

16 Q           Is it accurate to say that the focus was on  
17 the state constitution, whether -- the state  
18 constitution as interpreted to bar partisan  
19 gerrymandering?

20 A           That's exactly right. The purpose of the  
21 paper was to examine the Pennsylvania Supreme  
22 Court's interpretation of the free and equal clause.

23 Q           A couple of questions ago you said that you  
24 had a less influential role as a second author. Can  
25 you describe that for me.

1 A As you'll note, that this article was  
2 published in 2018, two years before I finished my  
3 Ph.D. I, at that point, would not call myself an  
4 expert by any means in election law. And so,  
5 Dr. Grofman took the primary task of drafting that  
6 article and in some ways this was part of my Ph.D.  
7 training.

8 Q So, you said that in 2018 you were not an  
9 expert in election law. When, in your mind, did you  
10 become an expert in election law?

11 A I'm not sure I would call myself an expert in  
12 election law. I do not have a law degree. I have  
13 taken one class, not for credit, on election law and  
14 I've not taken any other law classes in my life.

15 Q Okay. Moving on to the fourth item, can you  
16 describe that for me.

17 A We're talking about the paper, "Tools for  
18 identifying partisan gerrymandering with an  
19 application to congressional districting in  
20 Pennsylvania"?

21 Q Correct.

22 A This is a follow-up paper to Item Number 2  
23 that we just talked about just a moment ago, "Can  
24 State Courts Cure Partisan Gerrymandering." This  
25 follow-up paper is more of a quantitative analysis

1 of the effects of different districting plans.

2 We looked at -- we did quantitative measures  
3 of the various plans that were introduced either to  
4 the Pennsylvania legislature or the plan that was  
5 adopted by the Pennsylvania Supreme Court, looked at  
6 the number of county cuts, looked at the -- there  
7 would have been no population deviation in any of  
8 these plans because it was perfect equality, one  
9 person, one vote. So, at most, a deviation of one  
10 person.

11 And there -- and so, it was county cuts and  
12 we also looked at measures of -- that would indicate  
13 partisan gerrymandering through statistical type  
14 data analysis. I believe we looked at partisan  
15 symmetry, declination, and the efficiency gap.

16 Q Was the focus of that article partisan  
17 gerrymandering or other state or federal  
18 requirements for redistricting?

19 A Well, the title of the paper is identifying  
20 partisan gerrymandering. And so, some people  
21 believe that partisan -- I'm sorry. Let me add that  
22 another thing that we looked at was compactness.  
23 There may be other things that I'm forgetting at the  
24 moment, so forgive me for that.

25 But some people think that compactness can

1 tell you whether a plan is a gerrymander, some  
2 people tell you whether excessive splitting of  
3 counties is a gerrymander, and other people might  
4 argue that only partisan data can tell you whether  
5 something is a partisan gerrymander.

6 So, we were simply comparing, I believe, four  
7 different plans, one submitted by the -- the plan  
8 that was adopted by the legislature and signed by  
9 the governor in 2011; a plan that was proposed as a  
10 remedial by the legislature after this court case;  
11 one that was proposed as a remedial by the governor  
12 after the court case; and the one that was finally  
13 adopted by the court.

14 And, ultimately, we showed that the court  
15 scores as good or better on every criteria, you  
16 know, including those -- those found in the  
17 constitution, including county splits, it does  
18 equally better, and also including on all the  
19 measures of partisan gerrymandering that are found  
20 in sort of the data analysis type work on partisan  
21 gerrymandering.

22 Q Okay. Going back to Page 1, could you  
23 describe Item Number 6 for me.

24 A Item number 6 is the "ZIP Codes as Geographic  
25 Bases of Representation."

1 Q Can you describe what that article is about?

2 A That article was a response to an article  
3 that essentially criticized an article by  
4 Dr. Grofman by a couple of scholars who argued that  
5 districts should be built from zip codes as their  
6 base as opposed to, say, census geography, like  
7 census blocks or census tracts or some other  
8 individual thinks that districting plans should be  
9 built out of election precincts.

10 And so, they argue that the zip codes are the  
11 best baseline or the base because of  
12 representational concerns.

13 And that article was a response where I  
14 challenged their method for analyzing representation  
15 and then show the flaws in using zip codes because  
16 they are often not contiguous, they have very  
17 bizarre shapes, and people have no idea where the  
18 lines are because they're not a legal -- there's no  
19 legal basis to them.

20 Q Were you first or second author on that  
21 article?

22 A I was first author on that -- no. I'm sorry.  
23 I'm second author on that article.

24 As I stated, that was a response to an  
25 article that was solely authored by Dr. Grofman,

1 where he asked me to join him in the response  
2 because there was data analysis in which I was  
3 better situated to perform.

4 Q Did that article discuss redistricting at  
5 all?

6 A The article is about redistricting.

7 Q Okay. Did it discuss any of the state or  
8 federal requirements for redistricting?

9 A I don't remember the contents of this article  
10 specifically.

11 Q Okay. Do you recall if state or federal  
12 requirements for redistricting were a focus of that  
13 article, or if they were discussed, would it be  
14 incidental?

15 A It would be incidental. I think that at  
16 least at one point I mention that there are zip  
17 codes that actually cross state boundaries that  
18 would lead to a complication for using zip codes for  
19 redistricting. That clearly would be a violation of  
20 federal law.

21 Q Moving on to Article Number 7, "The  
22 Unanticipated Effect of COVID-19 on House  
23 Apportionments." Can you describe that for us?

24 A Yes. That is a really simple paper. And,  
25 you know, this is not one that -- a paper that I

1 think about a lot, so forgive me if I don't remember  
2 all of the details about the paper.

3           But, essentially, we have -- we were  
4 delivered census data very late in 2020, partially  
5 due at least to the fact that the census was unable  
6 to go door to door to count individuals because of  
7 the COVID pandemic.

8           And I believe that what we show is that the  
9 number of deaths that happened prior to census day  
10 may have been enough to affect the number of  
11 congressional districts that were assigned to each  
12 of the states. It's not directly related to  
13 redistricting. It's more directly related to  
14 apportionment, which is a separate process in the  
15 U.S. Constitution.

16 Q           Moving on to Item Number 8, can you describe  
17 that one for us.

18 A           This paper is a collaboration with multiple  
19 co-authors. It stemmed from a conference in which  
20 Professor Sam Wang attended on partisan polarization  
21 at Princeton University. It was a conference that  
22 was among natural scientists.

23           And the conference itself was tasked with  
24 proposing articles that would be co-authored with --  
25 the natural scientists would co-author with

1 political scientists to address issues of political  
2 polarization.

3           And our article was sort of a review article  
4 of sorts, thinking about U.S. democracy in the  
5 institutional configurations from the framework of,  
6 say, an engineer.

7 Q       Did that article discuss redistricting at  
8 all?

9 A       I do believe that we talk about redistricting  
10 in terms of who controls the process and how that  
11 might affect the outcomes.

12 Q       Okay. Do you recall if that article  
13 discussed any state or federal requirements for  
14 redistricting?

15 A       I highly doubt that it would discuss any  
16 state or federal requirements for redistricting.

17 Q       Okay. Moving on to Item Number 9, did that  
18 include any discussion regarding redistricting?

19 A       No.

20 Q       Okay.

21 A       We can talk about it, though.

22 Q       For Number 10, can you describe that one for  
23 us.

24           I'm sorry. Do you need more tea?

25 A       I can wait a little longer if everyone else

1 is willing to wait.

2 Q Get more tea, please.

3 A Why don't we talk about this article and  
4 then --

5 Q Okay, sure.

6 A So, Item Number 10 is "Turning Communities of  
7 Interest into a Rigorous Standard for Fair  
8 Districting."

9 You'll notice that I'm the last author in  
10 this article. That has meaning. I had very minor  
11 contributions to this article, which were mostly  
12 just helping to inform the content of the article to  
13 ensure that we haven't -- that the main authors had  
14 gotten things right. But, ultimately, my  
15 contributions were enough to include me as a  
16 co-author.

17 The idea is that in many state constitutions  
18 there are references to communities of interest.  
19 These are vague references in their provisions that  
20 haven't been well defined, but because they're in  
21 state constitutions, people might want to consider  
22 how we could better quantitate -- quantify -- I'm  
23 sorry, quantify what a community of interest might  
24 be.

25 Q In your mind -- so, let me ask this. In your

1 mind, is there a distinction between the concept of  
2 community of interest and core?

3 A Yes. There's a world's difference between  
4 those two.

5 Q Can you describe that difference?

6 A Sure. Well, the way I understand a core,  
7 which, you know, as it turns out, is actually a  
8 disputed concept. There's a recently published  
9 peer-review paper, you know, claiming that the  
10 definition of core can be -- can be distorted to  
11 achieve political ends. It's not a paper that I  
12 published. I've looked at it.

13 But in the same way, communities of interest  
14 are often used to achieve interests, sometimes  
15 political, sometimes otherwise, of those who are  
16 creating redistricting plans.

17 But they're not the same because a core is --  
18 at least in one definition, is the district as it  
19 exists before redistricting. So, as it existed,  
20 say, in the previous cycle.

21 A community of interest may be longstanding,  
22 it may be newly formed. The conception of community  
23 of interest is somewhat vague. As I often ask my  
24 students to think about what their community is,  
25 it's not -- it's sometimes geographic, it's

1 sometimes not. But it certainly is not the same  
2 thing as core.

3 Q Does Tennessee have a communities of interest  
4 requirement in its constitution?

5 A My understanding is that it does not.

6 MR. RIEGER: Okay. Would you like a  
7 break now before we get into the next article or do  
8 you want to push? Your call.

9 THE WITNESS: Could we take a break?

10 MR. RIEGER: Yes, take a break.

11 (Recess observed.)

12 BY MR. RIEGER:

13 Q You do recall that you are -- now that we're  
14 back on the record, that you are still under oath?

15 A Yes, sir.

16 Q And that the rules that we discussed at the  
17 beginning of the deposition still apply?

18 A Yes, sir.

19 Q Fantastic. Let's move on to the last  
20 publication, Number 11. Can you describe that one  
21 for me.

22 A This is using one of the measures of partisan  
23 bias that is found in the redistricting literature,  
24 one of the data analysis measures that I mentioned  
25 earlier, but to use it to look at the U.S. Electoral

1 College in the 2020 election.

2           And essentially, what we do is we typically,  
3 starting at least as early as 1973, in an article by  
4 Tufte, T-u-f-t-e, he shows two axes, one that has  
5 the number of votes, percentage of votes received by  
6 one of the two major parties and the percentage of  
7 seats. And we fold that over the Y axis so that  
8 both the democrat share and the republican share of  
9 the two-party vote is on the same axis simultaneous.  
10 So, you can see whether at different levels of vote  
11 share the parties are receiving the same number of  
12 seats.

13           In this paper we're talking about the  
14 Electoral College. And seats in this instance  
15 refers to the number of Electoral College votes.

16 Q           Does this article discuss or concern  
17 redistricting at all?

18 A           Not to my recollection, other than the  
19 measure.

20 Q           And does the measure have anything to do with  
21 state or federal requirements for redistricting?

22 A           No.

23 Q           If we could move on to "Other Publications"  
24 on Page 2, and let's start at the bottom and work  
25 our way to the most recent.

1           For "The Washington Post" article,  
2 "Pennsylvania has to draw new congressional  
3 districts but getting rid of gerrymandering will be  
4 harder than you think," can you describe that for  
5 me.

6         A       I don't recall, but I do know that that  
7 article was prior to Item Number 1 under  
8 "Publications" -- Item Number 2 under  
9 "Publications." It was the predecessor article.

10      Q       Okay. And is it correct that you were second  
11 author on that article?

12      A       That's correct.

13      Q       Do you recall if it concerned any state or  
14 federal requirements for redistricting other than  
15 the Pennsylvania Constitution's prohibition of  
16 partisan gerrymandering?

17      A       I don't recall.

18      Q       Okay. Moving on to the next one up, the  
19 medium.com article, can you describe that for me?

20      A       Similar to the apportionment article that  
21 were mentioned under Publication Number 7, this  
22 paper is a counterfactual idea that had undocumented  
23 immigrants not been included as persons for the  
24 purposes of the U.S. Census, how that would have  
25 affected the number of congressional districts each

1 state would have received.

2 Q And did that article have anything to do with  
3 state or federal requirements for redistricting?

4 A No.

5 Q Okay. The next article up, which is another  
6 medium.com article, did that article have anything  
7 to do with state or federal requirements for  
8 redistricting?

9 A No.

10 Q Okay. What is the "Amicus Curiae with  
11 Princeton Electoral Innovation Lab"?

12 A That was regarding ranked-choice voting in  
13 Maine.

14 Q Okay. Did that have anything to do with  
15 federal or state requirements for redistricting?

16 A No.

17 Q Okay. Moving on up, the other medium.com  
18 article, "Great Lobster and a More Equitable Voting  
19 System Exists in Maine," can you describe that one  
20 for us.

21 A That had to do with ranked-choice voting.

22 Q Okay. Were you first or -- sorry. Were you  
23 second author on that?

24 A That -- we ordered that alphabetically.

25 Those are two of my students.

1 Q Okay. And what was your role? Who was the  
2 principal drafter?

3 A I don't remember how we drafted that. This  
4 medium.com is a minor blog post, so it was a much  
5 more informal type of publication. And I think we  
6 were just commenting on the voting system used in  
7 Maine.

8 Q Okay. Did that have anything to do with  
9 the -- did that article have anything to do with the  
10 state or federal requirements for redistricting?

11 A No.

12 Q Did the next one up, "The Washington Post"  
13 article, have anything to do with state or federal  
14 requirements for redistricting?

15 A Not that I recall. It had to do with  
16 apportionment. Though we mentioned -- it was before  
17 redistricting, so we mentioned that it could affect  
18 redistricting. But not anything to do with federal  
19 or state law beyond apportionment.

20 Q Okay. I'll give you the next one up, if you  
21 could describe that one for us.

22 A I'm actually not sure that that ever was  
23 published. So, I'm not sure it should be there.

24 But it was -- it's an idea that I've long had  
25 and not -- have not pursued meaningfully,

1 unfortunately, about the rhetoric of President --  
2 before he was president, Donald Trump, and how he  
3 was -- is in the WWF Hall of Fame and how that might  
4 relate to sort of the way he thinks about politics.

5 Q Did that article discuss the Hair versus Hair  
6 match?

7 A Strike that.

8 Q I will strike that.

9 The next article up, an Election Law Blog  
10 post entitled "Fracking: A Contiguity-Related  
11 Redistricting Metric," can you describe that one for  
12 us.

13 A Sure. Fracking is this idea that a district  
14 will enter into a county that's only a part of a  
15 county but will enter it in two different places.

16 This can happen accidentally if you have  
17 computers randomly drawing districts where you might  
18 not think that it much matters or it can happen on  
19 purpose in ways that, say, is leading to a violation  
20 of Shaw versus Reno, race with a prime motive by  
21 picking up pockets of minorities, or it could be  
22 picking up pockets of, you know, partisans or for  
23 some other reason.

24 And so, we -- I had this idea that fracking  
25 may or -- may or may not be bad. It may be

1 incidental. We introduced that topic in the  
2 Election Law Blog and that metric is actually used  
3 now in Maptitude for Redistricting. So, it can  
4 calculate the number of so-called fracks, f-r-a-c-k.

5 Q Did that article discuss state or federal  
6 redistricting requirements other than, you know, as  
7 incidental towards the fracking analysis?

8 A What do you mean, incidental towards?

9 Q So, you discussed that there could be  
10 problems with picking up, for instance -- I'm sorry,  
11 I'll say this wrong -- but picking up minority  
12 voting population pockets. Am I correct that that  
13 involved a discussion of the VRA?

14 A Honestly, I don't remember. I don't recall  
15 whether we discussed any of the actual -- other  
16 criteria beyond this very specific idea that  
17 districts may enter into a county in two different  
18 spots and be discontiguous within the county.

19 Q Okay. And then, the last one, "Report of the  
20 Special Master," I noted on Page 3 that that's also  
21 included in your work experience. Just to make sure  
22 for the record, it's the same thing, same case?

23 A Same case, yes.

24 Q Okay. Can you describe your role and how you  
25 developed your report?

1 A Describe my role as special master?

2 Q Yes.

3 A Sure. I was appointed by the Supreme Court  
4 of New York to serve as special master. I was  
5 initially tasked with drawing contingent  
6 congressional maps in case the legislature was not  
7 able to remedy their violation of state law.

8 Upon appeal, the Court of Appeals of New York  
9 ordered that my job was not contingent any longer  
10 and that I would draw those maps. And they added  
11 the task of drawing the state Senate districts on  
12 top of that.

13 And the report is my way of conveying to the  
14 public the decisions that I made.

15 Q How were you appointed?

16 A I was appointed by the Supreme Court Judge in  
17 the state of New York.

18 Q Do you have any idea how you -- how you were  
19 chosen as the special master specifically?

20 A I don't know the details of why the Judge  
21 chose me, other than that he had received the  
22 recommendation that I would be the person who would  
23 be best suited for that role.

24 Q Do you know who made that recommendation?

25 A I know -- I don't know if I am allowed to

1 state on record private communications with the  
2 court. In my role as special master, I'm acting as  
3 a judge might act, and therefore, that would give  
4 the same privilege, I would believe, that any judge  
5 in America would be granted. So, I don't want to  
6 speak for Justice McAllister.

7 Q Okay. We'll put a pin in that for now. We  
8 may come back to it, but that may be something we  
9 can figure out later.

10           What was the specific challenge to the  
11 New York map?

12 A Well, the -- there are various challenges.  
13 And ultimately the Court opinion enunciates multiple  
14 reasons on why the maps were contrary to the  
15 constitution, including both substantive on the  
16 congressional map and procedural on both the  
17 Congressional map and the state Senate map.

18 Q Were you tasked as special master to make a  
19 recommendation as to whether those maps were flawed  
20 or was your role just to draw the new map?

21 A I was not involved in the litigation portion  
22 or the trial portion of that case.

23 Q So, did you make any recommendation at all  
24 regarding the maps that were ultimately struck down?

25 A No.

1 Q Okay. How did you start? I'm sorry. Strike  
2 that.

3 How many maps -- in both the first round of  
4 trial litigation and then after receiving the  
5 additional responsibilities by New York's Court of  
6 Appeals, how many maps did you ultimately draw for  
7 New York?

8 A I only drew the Congressional map and the  
9 state Senate map.

10 Q All right. Starting with the Congressional  
11 map, how did you begin by drawing that map?

12 A Well, there was a process that was laid out  
13 by the Court that included a hearing in Bath,  
14 New York, in May, in which I traveled to Bath and  
15 heard from citizens live. I also heard from the  
16 parties, the lawyers to the case and from the  
17 Attorney General's office.

18 That was to provide ideas, feedback of any  
19 kind that people wanted to submit. Then there was a  
20 period for people to, you know, give their comments  
21 via email to me or via court docket.

22 And I delivered a preliminary map at one  
23 point. That preliminary map was subject to comment  
24 by citizens and by the lawyers to the parties, and  
25 then ultimately delivered a map to the Court. It

1 was the Court's map that they delivered, I believe,  
2 on May 20th on my recommendation.

3 Q How did you -- can you walk me through how  
4 you drafted the preliminary map? How did you start?

5 A Again, I'm in the role of a judge here, so  
6 I'm not sure what I can say beyond what you find in  
7 the report of the special master.

8 But like I said, there was a large amount of  
9 litigation that had preceded my being appointed as  
10 special master, that I read through to understand  
11 the circumstance which led to the disqualifying of  
12 that plan.

13 There had been dozens or over a dozen  
14 redistricting commission hearings that had been held  
15 prior to a map being passed by the New York  
16 Legislature.

17 I hired a staff of people to help sort  
18 through the legal material and the material  
19 generated by citizens. Maps had been submitted to  
20 me for consideration, which I used to get a better  
21 understanding of the geographic and demographic  
22 dynamics of New York.

23 Q So, you were provided -- strike that.

24 So, were these maps that you were provided --  
25 draft maps you were provided, rather, was that your

1 starting place, so to speak, or did you start all  
2 the way back from scratch?

3 A I'm sorry. I'll ask you to repeat that  
4 again.

5 Q Sure. When you received the maps you just  
6 discussed, the draft maps, were those your starting  
7 points or did you start from scratch?

8 A When you say draft maps, I don't know if you  
9 mean the legislature's map that was ruled  
10 unconstitutional, the prior decade's map, or the  
11 commission's maps. There was a lot of maps.

12 Q Any of them. Were any of them your start --  
13 were any of them your starting point or did you just  
14 completely start from scratch with the census data  
15 and the counties?

16 A You know, I don't recall what the starting  
17 point of any particular map was. We -- I took ideas  
18 from the many maps that had been submitted and tried  
19 to find the best ideas in order to create a map that  
20 was compliant with all state and federal law.

21 Q Tell me about your assistants in your role as  
22 special master.

23 A I'm pleased to do that. My primary assistant  
24 was, you guessed it, Bernard Grofman, who I brought  
25 in to help ensure compliance with the Voting Rights

1 Act.

2           And the other help, I had help from three  
3 other individuals. The first was a young lady who  
4 was in her last semester of law school, actually  
5 graduated from law school while we were drafting the  
6 maps. She was at New York Law School and had  
7 followed all of the redistricting process in  
8 New York from the beginning of the commission  
9 through the legislature and had attended all of the  
10 hearings and had a deep, intimate knowledge of the  
11 proceedings.

12           The second individual was a fellow named  
13 Jason, who grew up in New York and has followed  
14 redistricting nationwide this cycle, and provided,  
15 you know, invaluable feedback on communities of  
16 interest, but also organizing the docket for me and  
17 following all of the filings, which were immense.

18           And then, finally, I had hired Zach Griggy,  
19 an undergraduate at the University of California,  
20 Irvine, to help with the actual drafting of the  
21 maps.

22 Q           And just for the record, so, we have  
23 Zach Griggy. Jason, do you know Jason's last name?

24 A           Jason Fierman and Marissa -- I don't know how  
25 to say her last name. All of the bios for these

1 individuals are in the special master report.

2 Q Excellent.

3 A With the same details I just mentioned to  
4 you.

5 Q So, Mr. Griggy, you said, assisted you in the  
6 actual drafting of the map.

7 A Uh-huh.

8 Q How would that process -- how did that  
9 process work? What was the breakdown between the  
10 time you spent drafting and the time Mr. Griggy  
11 spent drafting?

12 A To be clear, all of the members contributed  
13 to the drafting of the maps.

14 Zach has the expertise in the software, so he  
15 has the technical expertise. He has been hired by  
16 federal courts -- or, I'm sorry, state courts to  
17 help draft maps, remedial maps with Dr. Grofman and  
18 has done that several times this decade. He has  
19 also produced maps for -- I don't have his CV in  
20 front of me, but for city councils that have been  
21 put into effect. He is one of the best drafters of  
22 maps that I've ever seen.

23 And you asked about the breakdown between  
24 like how much I did and how much he did. A lot of  
25 the work was done simultaneously. We did a lot of

1 Zooming with Dave's Redistricting app on our screens  
2 shared so that we could draft maps together.

3 Q So, you used Dave's. Did you also use  
4 Maptitude?

5 A I did not use Maptitude.

6 Q Okay. Did you use anything besides Dave's?

7 A No.

8 Q Okay. Would you describe in a little bit  
9 more detail Dr. Grofman's role? You said that he  
10 helped ensure compliance with the VRA. Is there  
11 anything else that he did as part of your role as  
12 special master?

13 A I wouldn't minimize anybody's role. The team  
14 was equally helpful. As far as the specifics about  
15 what everybody did, it's hard to define those since  
16 everybody contributed at every point.

17 But the primary reason to have hired  
18 Dr. Grofman was for compliance on the VRA. As I  
19 mentioned to you earlier, he was the expert witness  
20 in Gingles versus Thornburg.

21 Q So, when you received -- so, when you created  
22 your preliminary map, did you run any data analyses  
23 on that map?

24 A Absolutely. In fact, when I delivered the  
25 preliminary map, I delivered it as a one-page report

1 that highlighted the number of county splits, the --  
2 I can't remember the table now, unfortunately.

3           I delivered a link to the plan in DRA so the  
4 public could view the plan and make comments. It  
5 said the number of county splits and it, I believe,  
6 had partisan bias scores on it.

7 Q       About how long did it take you from  
8 appointment to create the preliminary map?

9 A       I want to say that the process lasted in  
10 total about five weeks. To the preliminary stage  
11 was approximately three weeks.

12 Q       What, if anything, changed between the  
13 preliminary map and the map that was ultimately  
14 adopted by the Court?

15 A       Well, we received about 3,000 comments from  
16 the public. And there were some significant changes  
17 made to address communities of interest.

18           Specifically, I don't know how to think about  
19 what were the changes. I don't have a mental image  
20 of all of the changes that were made, but most of  
21 the comments relating to communities of interest  
22 were the types of changes that we were interested in  
23 making to make the map better.

24 Q       Did New York have a state constitutional  
25 requirement to ensure communities of interest?

1 A Yeah. The New York Constitution does have  
2 that provision.

3 Q Okay. Besides communities of interest, did  
4 the preliminary map have any issues concerning state  
5 and federal requirements for redistricting?

6 A Can you repeat that question?

7 Q Sorry. Apart from the communities of  
8 interest changes, did the preliminary map have any  
9 issues regarding state and federal requirements for  
10 redistricting?

11 A I don't believe that there were any changes  
12 that were made to -- yeah, I don't believe there  
13 were any changes that were made from preliminary to  
14 final that would have made it compliant -- it was  
15 already compliant with federal and state law at the  
16 preliminary map stage.

17 Q Do you recall what the deviation was of the  
18 preliminary map?

19 A It was a Congressional map, so --

20 Q I'm sorry. Sorry. I wanted to move on to  
21 the Senate map. Sorry about that. I should have  
22 said that.

23 With regard to the Senate map, do you recall  
24 what the deviation of that map was?

25 A The total deviation, the absolute deviation?

1 Q Yes.

2 A I'm sorry, there are multiple ways to measure

3 these things.

4 Q Let's do each one.

5 A Well, I don't -- I actually don't recall what

6 any of them are, so we'll leave it at that.

7 Q Okay.

8 A They were all compliant with state and

9 federal law. Let me leave it at that.

10 Q Okay. In terms of deviation for state and

11 federal law, what, in your mind, is the guidepost

12 there?

13 A Sure. In New York, the state Senate map has

14 very specific provisions about deviation. When you

15 split counties, the deviation must be the same as it

16 would be in a Congressional map if a county is

17 split.

18 So, in New York City, every single district

19 within the five boroughs must have exactly the same,

20 within one person, deviation.

21 Q And what if a county is not split?

22 A If a county is not split, it can be within

23 plus or minus 5 percent, as courts regularly allow.

24 Q Was there anything different about the

25 process for -- of drafting the map between the state

1 Senate map and the Congressional map?

2 A Difference as far as process?

3 Q Yes, sir.

4 A Well, there was far more comment on the  
5 Congressional map than there was the state Senate  
6 map, which is not terribly surprising. So, that was  
7 one of the big differences, the amount of -- the  
8 number of maps that we had at our disposal to help  
9 us with the process, help inform our drawing of  
10 those maps. That's the biggest difference.

11 Q So, for the -- just to make sure, for the  
12 state Senate map process, did you start the same  
13 way, which is reviewing, you know, the library of  
14 maps that, you know, had been offered and then  
15 selecting the best ideas and starting from there?

16 A Yes. The difference was the library was much  
17 more like one shelf of a book, or a bookshelf.  
18 There was only -- there was only the plans that were  
19 delivered by the parties to the case and then a  
20 couple of other ones.

21 In most cases, they were not compliant with  
22 the very specific block on border rules of the  
23 New York Constitution, so those plans were not as  
24 useful for informing our development of those plans.

25 Q Could you describe that rule for me, your

1 understanding of that rule.

2 A What I was saying earlier about how when a  
3 county is split, that the district must have exactly  
4 the same populations in each of the districts within  
5 those counties.

6 Q So, it's the same thing we just discussed?

7 A Yes.

8 Q Okay, excellent.

9 All right. Moving on to the "In Progress"  
10 section.

11 A Sure.

12 Q So, we'll go down instead of up, if that's  
13 all right.

14 A Sure.

15 Q The first article for -- that's accepted  
16 for -- or working paper, I believe, that's been  
17 accepted by the New Hampshire Law Review, that's the  
18 one we discussed earlier?

19 A It is.

20 Q The next one below, "Recent Approaches to the  
21 Definition and Measurement of Compactness," does  
22 that deal with or address redistricting?

23 A It does.

24 Q Does it address state or federal requirements  
25 for redistricting?

1 A I'm not sure if it addresses specific state  
2 or federal requirements. I think it talks more  
3 generally about the types of ways in which social  
4 scientists measure, or maybe practitioners of  
5 redistricting measure compactness.

6 Q Okay. Can you elaborate on that article and  
7 just describe it for me then, in as much detail as  
8 you can.

9 A Sure. And I don't have all the specifics of  
10 this article, but in general, compactness has  
11 generally been measured sort of through a geometric  
12 approach, a mathematical approach, which measures,  
13 say, the area of a district versus its perimeter or  
14 a perimeter of a circle and measures, you know, how  
15 well it fits into a circle so that you can  
16 measure -- it tries to measure how much the lines  
17 sort of zigzag or districts have, say, tentacles or  
18 whether they look more like symmetrical shapes, I  
19 guess for lack of a better way to describe that.  
20 That, by the way, is described in detail in at least  
21 two of my reports.

22 Then we also talk about some of the newer  
23 approaches to measuring compactness that are not  
24 mathematical based, because the mathematical ones  
25 have particular problems, such as the way you

1 project a sphere of the earth onto a flat surface  
2 can distort the area of a district and then can  
3 cause problems with measurement. So, depending on  
4 how you project, what projection system you use, can  
5 change the numbers.

6 And so, mathematicians have developed other  
7 tools for measuring compactness. It's not very  
8 interesting. It's kind of technical in nature.

9 Q Is compactness a state or federal requirement  
10 for redistricting or is it just implicated in  
11 circumstances as an indicator of partisan  
12 gerrymandering or the like?

13 A My recollection is that there is no  
14 requirement in federal law for compactness, but many  
15 states do have provisions in their state  
16 constitutions that require districts to be compact.  
17 But oftentimes those are vague, and, therefore, we  
18 were trying to get a better grip of the different  
19 ways in which we might measure these things.

20 Q To your knowledge, does Tennessee have a  
21 constitutional compactness requirement?

22 A Not to my knowledge.

23 Q Okay. The next article down, "Fracking: A  
24 Contiguity-Related Redistricting Metric," is that  
25 the same one that's in "Other Publications" right

1 next to 2021 on the same page? Is that the same?

2 A Yes.

3 Q Okay. I just didn't want to ask you again  
4 about it and waste your time.

5 A Oops.

6 Q The next one down, "Fallacies in  
7 Statistically-Based Claims about Massive Election  
8 Fraud in 2020," did that deal with redistricting at  
9 all?

10 A No.

11 Q Okay. The next one down, "The Terminology of  
12 Districting," I assume that that has quite a bit to  
13 do with redistricting. Am I right?

14 A That's right.

15 Q Okay. It says, "with Bernard Grofman."

16 A Uh-huh.

17 Q I understand that that is in progress. Do  
18 you anticipate being first author on that?

19 A I don't recall who was first author on that.  
20 I'll note that that paper, we submitted it to  
21 journals for publication. It has been rejected  
22 multiple times and have decided not to pursue  
23 publication. But I keep it on here because I know  
24 that there are professors who assign this document  
25 as part of their curriculum for their classes.

1 Q Were you ever given any reason for the  
2 rejections?

3 A It doesn't -- it doesn't advance any kind of  
4 political science theory. And generally, social  
5 science journals that are peer reviewed want  
6 something that is either methodologically, you know,  
7 adding to some debate or theoretically adding to  
8 some debate. This is, instead, more like a chapter  
9 in a book, which it may become.

10 Q Can you just elaborate on a description of  
11 it, just to give us a sense of what it is?

12 A Yeah. In some ways it's much like the NCSL's  
13 red book, but made to be more accessible to the  
14 general public so that they can understand the  
15 process of redistricting without -- you know, so  
16 words are used that are not known to the general  
17 public. Like something like compactness, they don't  
18 know what it is. So, we try to define what those  
19 words are.

20 Q In the next one down, "The Paradox of  
21 Malapportionment," can you describe that one for us.

22 A I don't recall the contents of that article.

23 Q Okay. Do you have any idea whether or not it  
24 deals with state or federal redistricting  
25 requirements?

1 A It does not. It's about apportionment  
2 process.

3 Q Okay. The next one down, "Is the Electoral  
4 College Biased in Favor of Republicans? Yes and  
5 No." Does that have anything to do with  
6 redistricting or state or federal requirements for  
7 redistricting?

8 A No. The only thing that relates to it is the  
9 way that we measure bias in the Electoral College is  
10 using the tools that have been developed to measure  
11 bias in redistricting plans.

12 Q The next one down on the next page, "An  
13 Experiment on Optimal Campaigning Using a Simplified  
14 Seven-State Electoral College."

15 A Uh-huh.

16 Q Does that have anything to do with  
17 redistricting?

18 A No.

19 Q Okay. The next one down, "Location,  
20 Isolation, and Influence," does that have anything  
21 to do with redistricting?

22 A No.

23 Q Okay. "Population-Dependence of Cabinet  
24 Sizes," does that have anything to do with  
25 redistricting?

1 A        Absolutely not.

2 Q        Okay. "Representation of Non-Eligible  
3 Resident Populations in Legislative Bodies," does  
4 that have anything to do with redistricting?

5 A        No.

6 Q        Okay. "Apportionment without non-citizens,"  
7 does that have anything to do with redistricting?

8 A        No.

9 Q        Okay. "Distinguishing Between the Legacy of  
10 Slavery, Racial Threat, and Density in the American  
11 South," does that have anything to do with  
12 redistricting?

13 A        No.

14 Q        "Nationalized Campaigns and Midterm Dropoff,"  
15 does that have anything to do with redistricting?

16 A        No.

17 Q        And "Habitual Voting Under Conditions of  
18 Gerrymandering," does that have anything to do with  
19 redistricting?

20 A        That paper is an idea, not a paper.

21 Q        Okay. Does it have anything to do with  
22 redistricting?

23 A        Gerrymandering is redistricting, yes.

24 Q        Okay. Does it have anything to do with state  
25 or federal requirements for redistricting besides --

( Overlapping speech. )

A                  No, the idea --

THE REPORTER: One at a time, please.

Please restate your question.

MR. RIEGER: Sure.

BY MR. RIEGER:

Q        Does it have anything to do with  
redistricting besides partisan gerrymandering? I'm  
sorry. Strike that. Let me ask it again.

10 Does it have anything to do with state or  
11 federal requirements for redistricting besides  
12 partisan gerrymandering?

13 A It only has to do with the down effects of  
14 what happens after a district has been  
15 gerrymandered.

16 Q Okay. Now, if I can get you to look back,  
17 starting at "Publications" and going all the way  
18 through "Work Experience," how many of these have  
19 been peer reviewed? And if you can just identify  
20 just, you know, Publications 11, Publications 10,  
21 and then going through the list, how many of these  
22 have been peer reviewed?

23 A I only count the ones that have been peer  
24 reviewed as the ones listed under the sub-header of  
25 publications, which on here is Numbers 1 through 11.

1 Q And all of those have been peer reviewed?

2 A Yes.

3 Q Okay. All right. Moving on to "Work  
4 Experience," we have gone through special master, we  
5 have gone through consultant.

6 Let's talk a little bit about assistant to  
7 the special master.

8 A Sure.

9 Q I know we discussed a little bit about it  
10 earlier, but I'd like to dig in.

11 So, starting with 2017, Navajo Nation versus  
12 San Juan County, Utah, can you describe that for us,  
13 that process for us.

14 A Well, I should just say that as assistant to  
15 the special master, I worked mostly as the technical  
16 assistant, helping Dr. Grofman actually physically  
17 draw the maps.

18 So, these cases were all after litigation,  
19 after trial, and after the plans were struck down.  
20 The federal courts then appointed Dr. Grofman as  
21 special master who, with permission of the Court,  
22 hired me for technical assistance.

23 Q And can you describe what is involved by  
24 technical assistance.

25 A Right. So, I would consider the kind of work

1 that I did in those three cases the same kind of  
2 work that Zach Griggy does for me now, which is to  
3 say that the special master ultimately is giving  
4 recommendations to the Court but needs to implement  
5 the Court's guidance.

6 As assistant to the special master, I took  
7 direction from Dr. Grofman in developing those  
8 remedial plans. On occasion, I may have given him  
9 things to consider, based on my own experience and  
10 my own looking at the maps. But, ultimately, his  
11 decisions were what were conveyed to the Court and  
12 ultimately adopted by the Court in all three of  
13 those cases.

14 Q So, in all three of those cases, you weren't  
15 asked to give -- sorry. Strike that.

16 In those three cases, the special master was  
17 not asked to give a recommendation as to whether or  
18 not the maps at issue in those cases were  
19 unconstitutional.

20 A That's right. By the time a special master  
21 is appointed, the Court has already ruled on whether  
22 the map is compliant with the Constitution.

23 Q Okay. In each of those cases, did you use  
24 any certain software or programs?

25 A I actually probably used various software

1 packages for these cases.

2 I believe in 2017 in Navajo Nation, I used  
3 ArcGIS. In Bethune-Hill, I used Maptitude for  
4 Redistricting. And in Wright versus Sumter County,  
5 even though it was the most recent, I actually don't  
6 remember what software I used.

7 Q Okay. If we could start with Navajo Nation,  
8 what was the process that the special master used in  
9 drawing the map?

10 A Again, work as a special master is privileged  
11 with the Court and I signed a confidentiality  
12 agreement with the Court on all of these cases.

13 Q Then let me ask you, was -- maybe more  
14 generally, since we've already discussed the  
15 New York case.

16 Was the process used by the special master in  
17 these three cases to draft the maps similar to the  
18 process used in New York?

19 A So, in general -- well, they're different  
20 cases, so they're not the same.

21 In these cases that are listed here, these  
22 are either violations of the Voting Rights Act or of  
23 Shaw versus Reno, which required narrowly tailored  
24 remedies, as opposed to New York, which ultimately  
25 was a procedural violation and the whole map was

1 struck down.

2 So, in these cases, only portions of the map,  
3 as opposed to the entire map. So, different  
4 process.

5 Q Different process. Were any of them -- in  
6 any of these, was the special master -- in any of  
7 these, did the special master have to draft an  
8 entire map?

9 A Yes. In Navajo Nation versus San Juan County  
10 and in Wright versus Sumter County, entire maps were  
11 redrawn.

12 Q Okay. Do you know whether or not the special  
13 master started from scratch on those maps?

14 A I know -- as we did in New York, we started  
15 with maps that had been given to us by various  
16 parties, though I don't remember the details of  
17 those cases. But because it was litigation, there  
18 were multiple parties that were involved with the  
19 process who had ideas.

20 Q Do you recall whether or not there was any --  
21 in either of those three cases, if there was any  
22 opportunity for public comment on a preliminary map  
23 or was it just, here's the map, Court?

24 A On those cases, if I remember correctly,  
25 there was no opportunity for the public on those.

1 Q Okay. So, in all three of those, there was  
2 no preliminary map; it was simply, here is the map  
3 for the Court's final approval.

4 A Exactly. The Court approves them. It's the  
5 Court's map, just to be clear. It wasn't the map of  
6 the special master. The special master makes  
7 recommendations to the Court and the Court either  
8 says go back to the drawing board or adopts the map.  
9 The Court ultimately determines what the law says,  
10 not the special master.

11 Q And under "Work Experience," the last item is  
12 "Expert Witness." And I note this case.

13 A Yes.

14 Q Has there ever been any other time in which  
15 you served as an expert witness?

16 A No.

17 Q All right. If we can move to "Invited  
18 Talks."

19 A Sure.

20 Q We'll just go down the list. So, 2021 starts  
21 with "Voting Rights and Election Law" at Hofstra Law  
22 School. Did that have anything to do with  
23 redistricting?

24 A Yes.

25 Q Can you describe it?

1 A He asked me to give a talk relating to my  
2 work as special master in New York primarily and  
3 more generally on the process of redistricting.  
4 This is a class of law students.

5 Q Did you discuss state and federal  
6 requirements for redistricting?

7 A We did.

8 Q Did you discuss any other state -- sorry.  
9 Strike that.

10 Did you discuss any state's specific  
11 requirements for redistricting?

12 A I believe we talked about some of the laws in  
13 New York specifically. Hofstra is a law school in  
14 New York, and so I'm certain that we spent some time  
15 talking about state law in New York.

16 And I want to just note for the record,  
17 there's a misspelling of the judge's name here.  
18 It's Solages, so it's missing the last part of it.

19 Q Okay. Tennessee didn't come up during that  
20 presentation to your knowledge, did it?

21 A It did not.

22 Q Okay. Did you present with anybody else or  
23 were you going solo?

24 A No. That was just me.

25 Q Okay. The next one down, "Measuring

1 Compactness," as part of that one, did you discuss  
2 redistricting at all?

3 A Yes.

4 Q How so?

5 A I believe that my remarks in that were based  
6 on the working paper that we talked about earlier,  
7 "Recent Approaches to the Definition and Measurement  
8 of Compactness."

9 Q Okay. And just like we -- sorry. Strike  
10 that.

11 As part of that talk, did you go into detail  
12 about state and federal requirements for  
13 redistricting or was it incidental to your thoughts  
14 on compactness?

15 A I don't believe there was any discussion of  
16 law.

17 Q Okay. Did you present that with anyone else  
18 or was that just you?

19 A That was just me.

20 Q Okay. 2021 again, "Voting Rights and  
21 Elections," University of Texas at Austin, can you  
22 describe that one?

23 A That was -- I did that via Zoom. My remarks  
24 were very brief and in conjunction with Professor  
25 Sam Wang from Princeton University. He was invited

1 by Beto O'Rourke and asked Beto if it would be okay  
2 if I came to participate as well.

3 Q Do you recall any of the substance of your  
4 remarks?

5 A I had COVID at the time, so I don't recall  
6 anything.

7 Q Okay. "Tools for Identifying a Partisan  
8 Gerrymander" at Princeton University, winter  
9 session, did that have anything to do with  
10 redistricting?

11 A It did. It was a presentation on the  
12 published paper that's listed in my CV under  
13 Number 4.

14 Q And as part of that, did you discuss any  
15 state or federal requirements for redistricting  
16 besides partisan gerrymandering?

17 A It was -- only thing that I would have  
18 discussed there was what was in that paper.

19 Q Okay. The next one, "2019 NCSL Capitol  
20 Forum," can you describe that one for us.

21 A I was invited by the National Conference of  
22 State Legislatures, NCSL, to talk about  
23 redistricting and what would happen over the next  
24 cycle, in a very broad way. I moderated a panel.

25 Q Who was on the panel?

1 A Oh, geez. I believe one of the panelists was  
2 Kathay Feng from Common Cause and I do not remember  
3 the other panelists.

4 Q Did you discuss any state or federal  
5 requirements for redistricting?

6 A I did.

7 Q Can you describe how you did that.

8 A The NCSL is a bipartisan, nonpartisan  
9 organization. And so, we stuck strictly to the  
10 requirements that are found in federal and state  
11 constitutions. I sort of gave an overview of what  
12 the law requires.

13 Q Okay. Was there any focus on any one  
14 particular requirement or just an overview?

15 A It was literally an overview, without any  
16 specifics about any particular state. Just what  
17 some states use -- or what some of the criteria are  
18 found in some of the state constitutions.

19 Q Okay. The next one down, "Redrawing the  
20 Virginia legislative map: the Bethune-Hill, racial  
21 gerrymandering case." Can you describe that one for  
22 me.

23 A I think I talked to the students there about  
24 the effect of the Bethune-Hill changes, so, the map  
25 that existed before the map was overturned on Shaw

1 versus Reno claims and then the map that was  
2 produced by the special master, in simply looking at  
3 what the effects of the plan were.

4 Q Okay. Was there any focus on any state or  
5 federal requirements for redistricting other than  
6 racial gerrymandering?

7 A No.

8 Q 2018, "Triple Play: Election 2018,  
9 Census 2020, and Redistricting 2021" at the  
10 University of Houston. Can you describe that one  
11 for us.

12 A This was an invited talk in person -- this is  
13 before COVID -- in person at the University of  
14 Houston. It was an all-day event and I was on a  
15 panel. I gave a talk that was wandering and not  
16 very focused and I remember talking -- I remember  
17 specifically talking about Navajo Nation.

18 Q Okay. Did you discuss in detail any state or  
19 federal redistricting requirements or was it another  
20 overview or something else?

21 A Yeah, I don't think that there would have  
22 been any law in that talk.

23 Q Okay. The next one down, "Representation of  
24 Non-Eligible Resident Populations in Legislative  
25 Bodies." Can you describe that one for us.

1 A This is, again, a working paper that hasn't  
2 probably been worked on since 2016, so quite a long  
3 time ago. My co-author and I on that particular  
4 paper, Angela Ocampo, are interested in whether  
5 people who have no rights to vote can still find  
6 representation in legislatures. I just think it is  
7 an interesting idea. And that's basically the  
8 concept.

9 Q Did it involve redistricting or state or  
10 federal requirements for redistricting?

11 A No.

12 Q Okay. The last one, "Asymmetry in State  
13 Grant Distribution: Why Proximity to the State  
14 Capital Matters," did that deal with redistricting  
15 at all?

16 A No.

17 Q Okay. Under "Service to the Discipline"  
18 says, "Referee: American Journal of Political  
19 Science, Political Geography, Election Law Journal,  
20 Public Choice, Political Research Quarterly." Can  
21 you describe what that is.

22 A Yes. The editors of those various journals,  
23 including the "American Journal of Political  
24 Science," which is the number one journal in  
25 political science, reached out to me to serve as a

1 peer reviewer on articles.

2 Q What sorts of articles do you peer review?

3 A Typically, I'm asked to review articles  
4 regarding either the Electoral College or  
5 redistricting because those are my areas of  
6 expertise.

7 Q How long have you been a referee?

8 A I started being a referee in graduate school.  
9 It was -- I don't have years listed here, so I don't  
10 recall the very first time. But it was when I was a  
11 more advanced graduate student, is typically when  
12 people start to referee reports.

13 Q Do you remember the year when you started, by  
14 any chance?

15 A I don't, I'm sorry.

16 Q Okay. But it would have been in grad school,  
17 you said?

18 A It would have been -- it probably would have  
19 started after I started publishing peer-reviewed  
20 journals on my own. That's when I think generally  
21 you get deemed as being expert enough to qualify as  
22 a peer reviewer.

23 Q All of those are different journals, correct?

24 A Uh-huh.

25 Q Okay. Do you recall which one was the first

1 you were selected as a referee for?

2 A I don't recall.

3 Q Do you recall which was the last, by any  
4 chance?

5 A I turned down one this week. I get requests  
6 to do these constantly.

7 Q Can you describe, if you can recall, when you  
8 were brought on as a referee for the "American  
9 Journal of Political Science"?

10 A It was a few years ago. I don't remember  
11 when.

12 Q Okay. About how many articles have you peer  
13 reviewed?

14 A I would say close to a dozen, but I don't  
15 have records. You don't list those things. Peer  
16 review is a blind process. We don't say which  
17 papers we review.

18 Q So, when you say a dozen, that's between all  
19 of these?

20 A It's double -- peer review is a double-blind  
21 process, so the author of the paper does not know  
22 who was the peer reviewer and the peer reviewer does  
23 not know who the author of the paper was.

24 Q Okay. So, a dozen total is --

25 A Approximately.

1 Q Okay. How many of those, if any, dealt with  
2 redistricting?

3 A I honestly could not give a number on that.  
4 As I indicated, half of my work is on the Electoral  
5 College and half is on redistricting. I would say  
6 it probably breaks down pretty similar to that, with  
7 maybe a little bit heavier on the redistricting  
8 because -- well, basically, it's what people are  
9 publishing about at this particular moment and  
10 Electoral College is not going to be published until  
11 next year.

12 Q Can you recall any specific ones that dealt  
13 with redistricting?

14 A No. And even if I could, I couldn't say  
15 because of the peer -- the double blind.

16 Q Did any of them deal with county splitting?

17 A I don't recall.

18 Q Okay. Did any of them deal with Tennessee?

19 A No.

20 Q Okay. Got to make sure on that.

21 And then "References."

22 MR. RIEGER: We can go off record.

23 (Discussion off the record.)

24 (Luncheon recess observed.)

25 / /

1 BY MR. RIEGER:

2 Q Welcome back. You do understand that you're  
3 still under oath.

4 A Yes.

5 Q And that the previous rules that we discussed  
6 earlier still apply.

7 A Yes.

8 Q Okay, great. Can you describe what you are  
9 being asked to provide -- the subject of your expert  
10 testimony?

11 A Yes. And I can refer to my reports?

12 Q Certainly. We're still on expert report,  
13 Exhibit Number 3, for now, in the binder, just in  
14 the start of it.

15 A Thank you for clarifying it.

16 So, are we talking only about the Senate  
17 plan?

18 Q We're talking generally. What do you purport  
19 to be an expert in?

20 A My expertise is in redistricting,  
21 specifically. I have expertise in other areas of  
22 American politics. I have a Ph.D. in American  
23 politics. And I am an expert when it comes to  
24 redistricting and the process of districting more  
25 generally.

1 Q Okay. Have you ever written a peer-reviewed  
2 paper that is not reflected in your CV on any topic  
3 relevant to that expertise? And it's only ones that  
4 aren't on your CV.

5 A I do not believe so.

6 Q Okay. Have you ever performed any type of  
7 peer-reviewed research on any topic relevant to that  
8 expertise that isn't reflected in your CV?

9 A Have I ever -- can you repeat one more time?

10 Q Have you ever performed any peer-reviewed  
11 research on any topic relevant to your expertise  
12 that is not reflected in your CV?

13 A I don't believe so.

14 Q Okay. That is fantastic.

15 Okay. So, let's start with the same exhibit  
16 that we're on, which is the Senate reapportionment  
17 expert report you prepared, which is marked as  
18 Deposition Exhibit 3.

19 (WHEREUPON, a document was presented,  
20 previously marked as Exhibit Number 3.)

21 BY MR. RIEGER:

22 Q When were you first contacted to provide  
23 expert testimony?

24 A I believe it was April of 2022. 2022, yes,  
25 the year we are in.

1 Q What specifically were you asked to do?

2 A Regarding this report?

3 Q Yes.

4 A This report, I was asked to create a  
5 demonstrative plan that adhered to all state and  
6 federal statutory law, specifically ensuring that  
7 all districts that are within a county are numbered  
8 sequentially.

9 Q Have you previously opined, either in writing  
10 or in any sort of presentation or talk, about the  
11 subject matter in the Senate reapportionment expert  
12 report?

13 A The provision of the Tennessee Constitution  
14 about sequentially numbered districts is fairly  
15 unique. I'm not sure of any other state that has  
16 that requirement. So, I have not prepared a report  
17 on that specific topic before.

18 Q Okay. Were you aware of that particular  
19 constitutional provision before you were engaged as  
20 an expert witness?

21 A I am not -- I was not specifically aware of  
22 any particular provisions of the Tennessee  
23 Constitution before engaging on this project.

24 Q Okay. Did you do any work regarding the  
25 Senate plan that isn't contained in your report?

1 A No.

2 Q Are you being paid for your expert testimony?

3 A I am.

4 Q What's the rate?

5 A \$200 an hour.

6 Q How many hours have you worked on -- have you  
7 worked on all -- sorry. Strike that.

8 How many hours in total have you worked on  
9 this case, not just this report, but the case as a  
10 whole?

11 MR. TIFT: You can answer it if you  
12 know.

13 THE WITNESS: I don't know the answer.  
14 I would say we have records, but I don't know.

15 BY MR. RIEGER:

16 Q Okay. Would you say it's more than 20 hours?

17 A Oh, yes.

18 Q More than, say, 50 hours?

19 A Oh, Jesus. I don't know.

20 Q Okay. Is there any sort of ballpark you can  
21 give? It could be a huge range. I'm just trying to  
22 get a ballpark.

23 A I have no idea.

24 Q Let me ask you this. Was there any  
25 limitation on the number of hours that you could

1 spend on these expert reports?

2 A I was not given a limitation.

3 Q Okay. Were you given any limitations on the  
4 reports or their content by anyone?

5 A No.

6 Q Okay. Who wrote the first draft of the  
7 Senate reapportionment expert report?

8 A I wrote the draft.

9 Q Okay. Were there any edits to the draft made  
10 by anyone else?

11 A Referring to like word changes or content  
12 changes?

13 Q Yes, any changes.

14 A I worked with counsel to make sure that  
15 everything was worded correctly and for formatting  
16 and for ensuring that I included proper  
17 qualifications and things like that.

18 Q Were there any substantive changes at all?

19 A No.

20 Q Okay. Were you provided anything by anyone  
21 when you were in the process of making this expert  
22 report?

23 A Provided?

24 Q Any documents, any information.

25 A On the Senate report?

1 Q Yes.

2 A I don't believe I was provided anything,  
3 including I'm not sure that I was given even draft  
4 maps. I think I found everything -- no. There was  
5 one map that was delivered that I call the Senate  
6 constitutional numbering map on Page 9 of this  
7 report.

8 Q The Senate constitutional numbering map?

9 A Yes.

10 Q And who was that provided by?

11 A As I say in the paper on the first line,  
12 "I was sent, by counsel, a map that was proposed  
13 that sequentially numbers districts in all counties  
14 as required by Tennessee Constitution."

15 Q Okay. Did you speak with anyone about this  
16 expert report besides counsel when you were drafting  
17 it?

18 A No. Just for clarification, I did work with  
19 Zach Griggy on these reports. Not on the content of  
20 the reports, but on the maps.

21 Though, on this particular one, I'm not sure  
22 that I actually did. I'd have to check. But I do  
23 indicate in the reports who I worked with.

24 Q Did you work with anyone who is not  
25 referenced in the reports?

1 A No.

2 Q Moving to Page 6 of the Senate report, did  
3 you look at any data or any information besides that  
4 which is set forth in "III. Data"?

5 A I wrote this data section as I went,  
6 referring to anything that I took off the internet  
7 or was delivered to me. So, my recollection is  
8 everything that is in here is everything that I  
9 used.

10 Q Okay. For your expert conclusion on Page 16,  
11 is there anything that you would change or add to  
12 your final conclusion?

13 A The one-sentence conclusion that I give in  
14 the first paragraph under Roman VI, "Given my  
15 experience and expertise in redistricting, it is  
16 easy to conclude that the Legislature could have  
17 numbered all districts within a single county  
18 sequentially," I stand by that.

19 Q Your expert -- does your expert report  
20 contain any discussion of why the Tennessee  
21 Constitution may require that all districts within a  
22 single county be consecutively numbered?

23 A I'm not a lawyer, so I don't usually get into  
24 issues of the law. I was asked by counsel to  
25 provide conceptual maps in which all districts were

1 numbered sequentially, and that's what I did.

2 Q So, you are not giving any other expert  
3 opinion, other than that sentence in Paragraph VI in  
4 your expert report?

5 A This is a very narrow report, yes.

6 Q All right. And you are not providing an  
7 expert opinion on the effect or the rationale of the  
8 Tennessee Constitution's requirement that all  
9 districts within a single county be numbered  
10 consecutively?

11 A Are you asking me for like a question about  
12 the law or my opinion on why it's in there?

13 Q Are you making an opinion as to either of  
14 those two things in your expert report?

15 A In this report, all I'm saying is that it was  
16 possible for the Legislature to number all of the  
17 districts sequentially.

18 Q Okay. So, in this report, you are not making  
19 an expert opinion regarding either the law or an  
20 opinion about why that provision may exist?

21 A Yeah. I don't believe I reference the law at  
22 all in this report.

23 Q Okay. All right. If we can move on to what  
24 has been marked as Deposition Exhibit 4, which --  
25 are you familiar with that document?

1 A Yes.

2 Q What is it?

3 A This is the Report of Plaintiffs' Expert

4 Regarding Tennessee State House Reapportionment.

5 It's my report delivered on October 10th, 2022.

6 Q Okay. Let me go back just a second to  
7 Deposition Exhibit 3. I think I know the answer to  
8 this but I want to make sure.

9 How many hours do you think -- how much time  
10 do you think you put in to the Senate  
11 reapportionment expert report?

12 A It was relatively few compared to this other  
13 report.

14 Q Okay. So, who wrote the first draft of this  
15 report?

16 A I wrote this draft.

17 MR. TIFT: Alex, should we admit it?

18 MR. RIEGER: Oh, certainly. If we can  
19 admit that as Deposition Exhibit 4.

20 MR. TIFT: No objection.

21 MR. RIEGER: Thanks, Scott.

22 (WHEREUPON, a document was marked as  
23 Exhibit Number 4.)

24 BY MR. RIEGER:

25 Q Could you describe the process of writing

1 this draft for me.

2 A This was -- these two drafts collectively  
3 were the first drafts I've ever written as an expert  
4 witness. So, I -- for my preparation, I found other  
5 expert witness reports in redistricting to help  
6 model the sort of flow of the report to ensure that  
7 I make clear for a court how things should be  
8 ordered.

9 So, starting with an introduction, moving on  
10 to my qualifications, and then presenting the data,  
11 background. That kind of organization was -- I  
12 figured out how to do that by looking at other  
13 expert witness reports.

14 Q Which other expert opinion reports did you  
15 look at? Can you remember any of them?

16 A I don't remember specifically. It would have  
17 been whatever I was looking at at the time. It may  
18 have been the reports from New York. In fact, it  
19 may have been the report of Sean Trende in which I  
20 got the layout from.

21 Q Okay.

22 A That would have been the report that he  
23 delivered in New York, just for clarification.

24 Q Okay. After you drafted it, were there any  
25 changes before it got into its final form?

1 A I worked with counsel to ensure that  
2 formatting made sense, that there were no spelling  
3 errors, and that the flow of the document made  
4 sense.

5 Q Did anyone besides counsel provide input into  
6 this expert report or its subject matter?

7 A No.

8 Q Okay. Were there any substantive changes in  
9 the content between the first draft and the final  
10 draft?

11 A No, I don't believe so.

12 Q Were any documents provided to you to assist  
13 you in writing this expert report?

14 A There was one map that was given to me by  
15 plaintiffs' counsel that I refer to as House  
16 Democratic Concept Map that you can find on Page 12  
17 of this document.

18 Q Okay. Anything else? Was anything else  
19 provided to you besides that?

20 A No, I don't believe so.

21 Q Had you previously rendered an opinion,  
22 either in writing or in any sort of presentation or  
23 talk, about the subject matter contained in this  
24 expert report?

25 A No, I had never considered this -- the map in

1 Tennessee, either -- for either body, either chamber  
2 of the Legislature.

3 Q Okay. When you say map, can you elaborate on  
4 what you're talking about?

5 A Or plan or whatever word you want to use.  
6 I've never considered these -- the Tennessee  
7 Legislative plans in any of my other work.

8 Q Had you ever -- had you ever considered  
9 Tennessee at all with regards to redistricting  
10 before you were engaged as an expert witness?

11 A No.

12 Q Okay. Were you aware or -- were you aware of  
13 Tennessee's constitutional provisions on  
14 redistricting prior to your engagement as an expert  
15 witness?

16 A No. Upon accepting this retainer, I looked  
17 up the constitutional rules referenced in the NCSL  
18 book and on the Tennessee website pertaining to  
19 constitution.

20 Q Okay. In terms of those guidelines, besides  
21 the -- sorry. Can you just -- strike all of that,  
22 please.

23 Which website are you referring to, just to  
24 make sure?

25 A Are we only talking about the House?

1 Q Yes.

2 A There's a website set up by the legislature  
3 committee on redistricting. I reference this on  
4 Page 6 of this report in its -- a website that was  
5 set up by the Tennessee House.

6 Q And that is the website that is  
7 [https://www.capitol.tn.gov/House/committees/  
8 Redistricting.aspx?](https://www.capitol.tn.gov/House/committees/Redistricting.aspx)

9 A Yes.

10 Q Okay. Did you look at anything else besides  
11 that website and the NCSL red book for -- to  
12 determine what the guidelines for redistricting  
13 would be in Tennessee?

14 A Well, and the State Constitution.

15 Q Okay. Anything besides -- anything else?

16 A No.

17 Q Okay. In terms of the Roman III Data, did  
18 you look -- in writing this expert report, did you  
19 look at anything besides this information that's  
20 listed under Roman III data in forming your expert  
21 opinion?

22 A No.

23 Q So, as part of this expert report, you have  
24 included under Roman V a list of illustrative plans.  
25 Can you walk us through the process of how you

1 attempted to create these maps?

2 A Yes. I -- in basically the order that they  
3 appear in this document, I started by -- counsel  
4 initially asked me to draw a plan that kept Shelby  
5 County whole so that the county line was not split.  
6 That county should include 13 total districts as the  
7 same as the enacted plan. And I was to draw a plan  
8 that split as few counties as possible in the  
9 process.

10 And so, the first plan I started with was  
11 Plan 13a. That's a baseline plan. I drew it with  
12 basically no regard for data besides population.

13 And that plan, upon finalizing it, which had  
14 a low total number of county splits, I also noticed  
15 that it eliminated one of the majority-minority  
16 districts, which led me to produce Plan 13b. But I  
17 didn't want to exclude this plan from the expert  
18 report since I had created it.

19 13b attempts to correct the problem of  
20 retrogression of the District 80 from Map 13a. And  
21 that plan was what I called 13b.

22 I then created a Plan 14a, which created  
23 14 districts inside of Shelby County and then  
24 created as few county splits as possible.

25 Then I created two additional plans that I

1 call 13.5a, 13.5b. Those plans do split the Shelby  
2 County border.

3 Q Did anyone assist you in drawing these maps?

4 A Yes. I had able assistance from Zach Griggy.

5 Q What was his role?

6 A I asked him to -- I gave him the instructions  
7 to draw maps with as few county splits as possible,  
8 the same instructions given me by counsel.

9 Q Did he provide any input about the lines  
10 themselves or was he just charged with an  
11 administrative function of using the technology?

12 A He is capable to find combinations of  
13 counties that would provide whole districts so as to  
14 minimize the number of county splits. And so, he  
15 did provide substantive, as well as technical,  
16 assistance.

17 Q Okay. What is his background?

18 A Zach is currently an undergraduate student at  
19 the University of California, Irvine. He has drawn  
20 maps that have been adopted by legal political  
21 entities, and has served as assistant to Dr. Bernard  
22 Grofman, who served as special master. And he  
23 worked on congressional districts in the 2022 cycle  
24 in Virginia and he worked as assistant to  
25 Dr. Grofman working on congressional districts in

1 North Carolina. And he worked as my assistant in  
2 New York drawing congressional districts in the  
3 state Senate districts.

4 Q Of each of these maps, what percentage of the  
5 line drawing can you estimate was his versus yours?

6 A I don't know that I could estimate that  
7 percentage. Ultimately, I was responsible for  
8 ensuring that these plans met the legal  
9 requirements. And I don't know that there's a  
10 percentage on the work that can be defined that way.

11 Q So, your goal in drafting this expert report  
12 was for the -- was to create illustrative plans that  
13 comply with the relevant federal and state  
14 requirements for redistricting while minimizing  
15 county splits?

16 A Can you repeat just one more time to make  
17 sure I got that right?

18 Q Sure. So, your goal when drafting this  
19 expert report was to create illustrative plans that  
20 comply with state and federal requirements for  
21 redistricting while also seeking to minimize county  
22 splits?

23 A That's right.

24 MR. TIFT: Object to the form.

25 You can answer.

1                   THE WITNESS: Yes.

2 BY MR. RIEGER:

3 Q                 Thank you. Did each of these plans -- you've  
4 listed five illustrative plans here. Were all of  
5 them compliant with all of the federal and state  
6 requirements for redistricting?

7 A                 Map 13a, as I state, took a district that was  
8 performing for a protected minority group and made  
9 it no longer performing. Therefore, that map would  
10 not be compliant with current guidelines by the  
11 U.S. Supreme Court.

12                  The rest of the maps, as I understand them,  
13 meet all of the criteria under federal and state  
14 law.

15 Q                 Talk to me about the one person, one vote  
16 requirement for state maps and how -- what is the  
17 deviation? What's the range?

18 A                 My understanding of the law is that the  
19 U.S. Supreme Court requires that these districts be  
20 substantially equal in population and have -- define  
21 that as a plus or minus 5 percent deviation,  
22 sometimes called an overall deviation of 10 percent.

23 Q                 Is that a hard line or is that something that  
24 you can cross?

25 A                 It's a bright-line test.

1 Q Okay. Does being under 10 percent or the  
2 5 percent either way -- strike that.

3 How are you most comfortable discussing the  
4 concept? Would you prefer plus or minus 5 percent,  
5 or if I say 10 percent deviation, will you know what  
6 that means?

7 A Well, this is a disputed fact here, so I  
8 prefer plus or minus 5 percent. In the courts that  
9 I've worked with, that's what they require, is plus  
10 or minus 5 percent.

11 Q Okay. We can talk about it in terms of plus  
12 or minus 5 percent.

13 Does being within plus or minus 5 percent  
14 insulate you from challenges under one person, one  
15 vote?

16 A I am not a law scholar and so I don't know  
17 what the law says about that, but I do not believe  
18 that it is -- and I'm forgetting the legal term, but  
19 it is not a safe harbor, that your plan could still  
20 be challenged, even if it is within those bounds.

21 Q So, when you were doing -- when you were  
22 drafting these illustrative plans, your goal was to  
23 stay under that plus or minus 5 percent but not get  
24 that deviation or range as low as possible?

25 A I actually would really have liked to get the

1 deviation range much lower, but one of the goals of  
2 these maps was to keep as much of the legislative  
3 prerogative in place as possible. And that was  
4 constraining, because the Legislature had districts  
5 that were quite close to the edge of a plus or minus  
6 5 percent, including three districts all within one  
7 county that were over 5 percent.

8 Q When you were drafting these illustrative  
9 plans, were you operating as if there were a  
10 guideline against splitting a major urban county  
11 like Shelby, Davidson, Knox, or Hamilton?

12 A Are you asking me what I was asked to do by  
13 counsel or what my understanding is?

14 Q I'm just asking your understanding and what  
15 you used when you were making these plans or if you  
16 used different guidelines for different ones. I  
17 just want to make sure.

18 A Well, in all -- I believe in every single  
19 plan, almost every urban county is held identical to  
20 the plan that was in the enacted plan.

21 Only Shelby County is changed in Plans 14a  
22 and the 13.5a and 13.5b. In 13a and 13b, Shelby  
23 County is identical to the enacted plan, which means  
24 that they were not -- the counties themselves were  
25 not split.

1           In 13.5b -- I'm sorry. In 13.5a and 13.5b, I  
2 do cross the Shelby County boundary because there  
3 are population pressures, especially in western  
4 Tennessee, that can be alleviated by splitting that  
5 county boundary, and in doing so, actually further  
6 decreases the total number of county splits. So, by  
7 increasing by one, you decrease the entire state's  
8 by two.

9       Q       Do you know whether or not it is a  
10 requirement not to split an urban metropolitan  
11 county in Tennessee?

12      A       That is a matter of law. It isn't in the  
13 constitution.

14      Q       Do you think there is one, one way or  
15 another?

16      A       Do I think there's a prohibition on  
17 splitting --

18      Q       Yes.

19      A       I don't read it in the law, no.

20      Q       Okay. When you were making these five  
21 illustrative reports, did you pay any attention to  
22 incumbent pairings?

23      A       I was not provided incumbent pairings until  
24 about two weeks ago.

25      Q       Okay. When you were drawing these

1       illustrative maps, were you also considering black  
2 voting age population and other minority groups?

3       A       Well, I did not consider that in my initial  
4 draw of Map 13a, as I said earlier. After 13a, I  
5 did consider that one of the majority-minority  
6 districts had been retrogressed so that it was no  
7 longer a minority opportunity district and likely in  
8 conflict with the Voting Rights Act and ensured that  
9 that was no longer the case in Map 13b.

10      Q       How close were you willing to get to the line  
11     in terms of minority population in terms of a  
12     percentage? Were your maps -- you know, were you  
13     willing to let your maps go as low as 50.01 or was  
14     there some other minimum that you were comfortable  
15     with?

16      A       There's no requirement in federal law that  
17     districts have to have some minimum percentage of  
18     African Americans or any other racial group in them.  
19     My understanding of the law is setting targets like  
20     that would be unconstitutional.

21      Q       Okay. Then, explain to me how your plan --  
22     how you evaluated these five illustrative plans for  
23     compliance with the VRA.

24      A       I did not perform VRA analysis on these  
25     plans. I was tasked with drawing plans that

1 complied with federal and state law. And the way we  
2 ensured -- I want to be careful how I say that. Not  
3 ensured compliance.

4 I made sure that there was as many minority  
5 districts in my plans, minority opportunity  
6 districts, as there was in the enacted plan. So,  
7 that's taking at face value that the enacted plan is  
8 not a violation of the Voting Rights Act.

9 Q Is there a distinction in your mind between  
10 minority districts and majority -- and minority  
11 opportunity districts?

12 A I think there are some distinctions  
13 linguistically. There are people who will kind of  
14 colloquially say a majority-minority district, where  
15 a majority of the citizens in the district are of  
16 minority status.

17 There are opportunity districts, which is  
18 more of a legal idea, the idea that the Voting  
19 Rights Act is -- Section 2 of the Voting Rights Act  
20 is talking about, which is that minorities are not  
21 denied the opportunity to elect candidates of their  
22 choice.

23 That does not necessarily mean that a  
24 district has to be a majority. There's no  
25 requirement that they are. It's just that the

1 districts must perform for minorities.

2 Q When you do that Voting Rights Act  
3 analysis -- which I understand you did not do in the  
4 five illustrative plans. When you do that analysis,  
5 are you allowed to combine different minority groups  
6 into a coalition to comply with any VRA requirements  
7 or is that something that you can't do?

8 A This is a question of the law --

9 MR. TIFT: Let me just object. I'm just  
10 going to give a standing objection. To the extent  
11 that a question is calling for a legal decision on a  
12 disputed legal question, I'm just going to object  
13 that, you know, ultimately, the disputed legal  
14 questions are going to be for the courts to decide.

15 MR. RIEGER: Of course.

16 MR. TIFT: But he can certainly answer  
17 to his experience and knowledge. I'm just going to  
18 say that once and not say it every time.

19 MR. RIEGER: Sure, that's fine.

20 THE WITNESS: So, the question is --

21 BY MR. RIEGER:

22 Q When you do your -- when you analyze maps for  
23 Voting Rights Act compliance, do you -- is it  
24 possible to use a coalition of different minority  
25 groups or do you just look at each minority group in

1 isolation?

2 A So, this is a legal question and right now  
3 the circuit courts are split on this issue. So,  
4 there's no clear guidance on whether you should use  
5 coalition or not coalition. And the circumstances  
6 of the state might dictate that answer.

7 In Tennessee, there's -- coalition districts  
8 are not needed because the African American  
9 population is sufficient to draw majorities in these  
10 areas in which they live.

11 Q So, did you perform VRA analyses in  
12 Pennsylvania and New York?

13 A I didn't -- I did not perform the VRA  
14 analysis in Pennsylvania. An expert was hired for  
15 that.

16 Q Okay.

17 A In New York, I hired Bernard Grofman to help  
18 with the VRA analysis.

19 Q What did they use? Did they allow for the --  
20 for the use of coalitions or did they adhere  
21 strictly to each minority population in isolation?

22 A I think -- I don't want to speak to how  
23 people do their analyses. I've seen it done both  
24 ways. Oftentimes, doing it either way gives you the  
25 same answer, as it likely would in Tennessee.

1 Q Well, in both cases you were in charge of --  
2 at least in New York, you were the special master in  
3 charge of ensuring compliance, right?

4 A Uh-huh.

5 Q So, how do you know that the map would comply  
6 with constitutional requirements without reviewing  
7 the analyses of the VRA compliance?

8 A Well, first of all, we did not draw with race  
9 as a motive in those districts. So, complying with  
10 the VRA is -- we're confusing concepts here, right?  
11 We don't draw with race in motivation. We draw  
12 districts naturally and then you ensure that you  
13 haven't failed to comply with the Voting Rights Act.

14 And so, in these areas that we're talking  
15 about, we're usually talking at the congressional  
16 district level about very sufficiently large  
17 populations. In these cases we're usually talking  
18 about African Americans.

19 Q So, in New York, which was it? I mean, it  
20 had to be one or the other analysis or maybe even  
21 both analyses. Which was selected?

22 A Basically, in New York, there's no reason to  
23 suggest there was a violation of the Voting Rights  
24 Act because we drew districts naturally, and by  
25 drawing those districts naturally, we automatically

1 drew the Voting Rights Act.

2 So, we were ensuring that we hadn't  
3 retrogressed, that we hadn't eliminated districts  
4 that previously existed.

5 Q How do you determine whether or not a  
6 district is majority-minority?

7 A How do I determine?

8 Q Uh-huh.

9 A Well, using demographic data collected by the  
10 U.S. Census. If you're using the term  
11 majority-minority to mean that the majority of the  
12 population, whether voting age or citizen is  
13 non-white, you can simply, you know, take a  
14 percentage of the population that is -- that  
15 identifies as any category other than non-white and  
16 that's your minority population. If it's greater  
17 than half of the total population, then you have a  
18 majority-minority district.

19 Q Okay. Is that a -- is that a coalition  
20 approach?

21 A When you're talking about the VRA analysis,  
22 it's much more complicated than just simply saying  
23 is something a majority-minority.

24 There are three prongs to the Gingles test.  
25 All three of them need to be met to prove that

1 there's been a violation of Section 2. And when it  
2 comes -- and one of those prongs is racially  
3 polarized voting.

4 In the circuit courts that have indicated  
5 that coalition districts are acceptable, you must  
6 also show that the coalition votes as a block and  
7 has routinely voted by whites against their  
8 interest. So, there are multiple prongs to that  
9 approach.

10 It needs to be stated that the approach to  
11 proving a Section 2 violation is different than  
12 drawing a district that complies with the Voting  
13 Rights Act.

14 Q And you did not perform a VRA analysis in  
15 your five illustrative maps.

16 A That's right.

17 Q Okay.

18 A And just to further clarify, I held the VRA  
19 districts the same as in the enacted plan. So, it's  
20 making the assumption that the Legislature performed  
21 the proper analysis to determine that they've  
22 complied with the Voting Rights Act. If they failed  
23 to do that, then not only is -- are my plans not  
24 legal, but neither is the enacted plan.

25 Q Did you -- in your illustrative maps, did the

1 result of any of those maps result in a decrease in  
2 minority population in districts?

3 A In the maps where -- well, I don't know how  
4 to answer that. I'm sorry.

5 Q In your five illustrative maps, in any of  
6 them, did you reduce the minority population of any  
7 district below that which the legislature did?

8 A You know, again, I'm not sure how to answer.  
9 There's 99 districts in Tennessee and the minority  
10 population of any one of those may have gone up or  
11 down.

12 But there are the same number of effective  
13 minority districts in all of my plans, aside from  
14 Map 13a, which I've already said is not one that I  
15 would suggest to the Court for the purposes of  
16 adopting. But the rest of them have the same number  
17 of opportunity districts compliant with the VRA. At  
18 least as many, if not more.

19 Q Did any of your illustrative maps have a  
20 greater deviation than the map that was enacted by  
21 the General Assembly?

22 A On overall deviation or average deviation?

23 Q Overall.

24 A Overall deviation, yes.

25 Q Okay. When you drew these five illustrative

1 plans, did you attempt to preserve prior cores? Was  
2 that a factor in drawing these maps?

3 A Well, we -- as I state on Page 13,  
4 51 districts, so 51 out of 99, were identical to the  
5 enacted plan. So, every one of those cores was  
6 precisely preserved to the enacted map of 2022.

7 Q So, you believe that you have appropriately  
8 attempted to preserve prior cores because you  
9 started with the general framework of the adopted  
10 map and how it attempted to preserve prior cores?

11 A That's one way --

12 MR. TIFT: Object to the form.

13 Go ahead.

14 THE WITNESS: That's one way to think  
15 about preserving prior cores. In a later report, it  
16 was suggested that the core preservation should have  
17 been to the 2012 map, and I have produced a map  
18 subsequent that preserves the cores to the same  
19 extent that the Legislature did to the 2012 map in  
20 total.

21 BY MR. RIEGER:

22 Q How long did it take you to do this  
23 particular expert report?

24 A This one took a considerable amount of time  
25 more than the previous report on the Senate. Again,

1 I'm not sure I can estimate the hours. I just don't  
2 have the numbers in front of me.

3 Q When did you -- when did you -- let me ask it  
4 this way. When did you start working on it? Was it  
5 really close to when you were engaged in April or,  
6 you know, was it -- was it later than that?

7 MR. TIFT: Object to the form.

8 Go ahead.

9 THE WITNESS: So, I started this  
10 engagement in April before I was appointed special  
11 master in New York. That was not this report we're  
12 talking about today.

13 I didn't do this report until October  
14 and the work that I did on this would have only  
15 lasted maybe -- or started maybe several weeks  
16 before, at most, and it was far after I had  
17 concluded my work in New York.

18 BY MR. RIEGER:

19 Q Okay. And in drawing these maps and drafting  
20 these expert reports, it's your belief that a  
21 guideline is to create the absolute smallest number  
22 of county splits while complying with all of the  
23 other federal and state requirements for  
24 redistricting; is that right?

25 A Can you restate the question?

1 Q So, along with compliance with state and  
2 federal requirements for redistricting, it is your  
3 belief that it is a Tennessee constitutional  
4 requirement that as few counties can be split,  
5 that's the most you can split?

6 A Yeah.

7 MR. TIFFT: Object to the form.

8 Go ahead.

9 THE WITNESS: Let me see. Page 7  
10 of this report, I have a line quoting from  
11 State ex rel. Lockert versus Crowell, quote, cross  
12 as few county lines as is necessary to comply with  
13 the federal Constitution.

14 BY MR. RIEGER:

15 Q So, is it your belief that six years from  
16 now, if someone came up with a map that split even  
17 less counties than yours, your map would be subject  
18 to challenge and would be unconstitutional?

19 A I can't speak to what the law requires in  
20 Tennessee, only as I read it. That needs to be  
21 interpreted by the state Supreme Court what its  
22 Constitution requires, whether it requires an  
23 absolute minimum.

24 Q Or?

25 A I have nothing else to add.

1 Q Okay. If I could flip to Page 18, which has  
2 your conclusion on it.

3 A Uh-huh.

4 Q If I could point you to, on Page 19, the  
5 first full paragraph there, "It is possible that  
6 even fewer counties need to be split..."

7 A Uh-huh.

8 Q "...but given the time constraints of this  
9 report, I have not found a plan that does better."

10 If that plan did exist and were discovered  
11 later, would that plan be your recommendation?

12 A I don't know that I would recommend a plan  
13 that necessarily splits more. There are many  
14 trade-offs in redistricting.

15 It depends on whether the state Supreme Court  
16 requires the absolute minimum to be found. There is  
17 no analytical solution, as far as I understand. I  
18 say that earlier in the report, that there is no  
19 analytical way to find the minimum.

20 My conclusion is that the 30 splits found in  
21 the enacted plan, which is, sort of, the maximum  
22 amount allowed by the guidelines given by the  
23 redistricting committee, was not a good faith effort  
24 to find less. Because with relatively little work,  
25 I could find five plans on a very tight time

1 constraint that had far fewer splits, including as  
2 many as only 22, which is significantly different  
3 than 30 county splits.

4 Q Let's talk about that, that sentence towards  
5 the bottom there. "In overpopulating each district  
6 in Shelby County, the Legislature has not given a  
7 good faith effort to balance the constitutional  
8 criteria in state and federal law."

9 What, in your expert report, do you rely on  
10 for determining that the Legislature did not act in  
11 good faith?

12 A Can you point me to the line you're referring  
13 to?

14 Q Sure. So, it's the first line in that  
15 sentence is "533."

16 A Yes.

17 Q Then "(1964)," then "In overpopulating each  
18 district..."

19 A Okay. (Reviewing document.)

20 Well, so, the first part of the sentence,  
21 overpopulating each district in Shelby County, by  
22 sealing in the county and limiting it to only  
23 13 districts, it means every single district in  
24 Shelby County has a population that's greater than  
25 ideal, meaning they get less representation in

1 Legislature. Every single citizen of Shelby County  
2 gets less representation in the Legislature than on  
3 average across the state.

4 Q And do you attribute that to the fact --

5 A And --

6 Q I'm sorry. I apologize. I didn't realize  
7 you weren't done. Please go ahead.

8 A I do want to say one more thing.

9 Q Sure, of course.

10 A And the -- it's not good faith because I have  
11 shown in this report that by splitting the Shelby  
12 County border, you can actually further reduce the  
13 number of county splits.

14 So, if the reason for not splitting Shelby  
15 County was to reduce the number of county splits to  
16 keep it within a range, that's not good faith.

17 Q So, let me -- I want to make sure that I have  
18 this. So, your expert opinion is that Shelby County  
19 is overpopulated?

20 A Yes.

21 Q And --

22 A Well, the districts in Shelby County are  
23 overpopulated.

24 Q Okay. The districts in Shelby County are  
25 overpopulated and that's caused by not breaking open

1 the Shelby County border.

2 A That's right.

3 Q Okay.

4 A By limiting it to only 13 districts, every  
5 district in Shelby County, by definition, is  
6 overpopulated.

7 Q Okay. Are you familiar with any maps that  
8 the Legislature had before it at the time it enacted  
9 its chosen House map?

10 A I had not seen any of those maps. On the  
11 website we referenced earlier, there were one-page  
12 documents referring to different plans that were  
13 submitted. But if I remember correctly, there were  
14 no plans that were legally compliant that were  
15 presented to the committee -- the committee for the  
16 Legislature for their -- for their ability to look.

17 So, I had no other plans besides the enacted  
18 plan, what I refer to as the 2022 enacted plan, and  
19 then the Democratic Concept Map that was provided to  
20 me by counsel.

21 Q Do you believe that the House Democratic  
22 Concept Map was constitutionally compliant?

23 A I have analyzed that plan and it has far  
24 fewer county splits than the enacted plan, I  
25 believe 23.

1           And it does split the Shelby County border,  
2 so there's a question of law about whether that's  
3 allowed. I believe that it is good policy to split  
4 the Shelby County border because, as shown between  
5 this map and 13.5b, that by splitting Shelby County,  
6 you can continually -- continue to reduce the number  
7 of other counties that are affected. So, fewer  
8 other counties are split in order to do that.

9           And it also has the added benefit of reducing  
10 the average deviation of each of these districts.  
11 The Shelby County districts are more equally  
12 allocated representatives in the House.

13 Q       The -- despite opening Shelby County, the  
14 House Democratic Concept Map had a higher deviation  
15 than the enacted map. Is that right?

16 A       A higher overall deviation?

17 Q       Yes.

18 A       I tend -- in my personal work, I've never  
19 used overall deviation because it's a bright-line  
20 test that the courts have established to ensure that  
21 they aren't inequitably distributing representation.  
22 It's a bright-line test. It only speaks to two  
23 poles, the largest and the smallest district, and it  
24 says nothing about the 97 other districts.

25           So, I tend to use mean deviation or average

1 deviation. I explain that in my dissertation in one  
2 of those published papers, why that's the better --  
3 the better measure. And lots of courts agree that  
4 the average deviation says a lot more about a plan  
5 than the overall deviation. As long as you're  
6 within 10 percent, the overall deviation is fine.

7 In Mr. Himes' response report, he lists the  
8 previous decade's overall deviation of plans enacted  
9 by the Legislature and they're all between 9 and  
10 10 percent, sometimes reaching very close to  
11 10 percent, which is right around the -- where it is  
12 for all of the plans that I develop and the  
13 Democratic Concept Map.

14 And the overall deviation on the Democratic  
15 Concept Map is actually slightly lower than the  
16 enacted map for the 2022 House.

17 MR. TIIFT: I'm just going to briefly  
18 say, you're talking faster and faster.

19 THE WITNESS: I know. Can we take a  
20 break?

21 MR. RIEGER: Yes.

22 (Recess observed.)

23 BY MR. RIEGER:

24 Q You understand that you are still under oath?

25 A Yes.

1 Q And you understand that the rules we  
2 discussed at the start of the day still apply?

3 A That's right.

4 Q Okay, excellent.

5 I have a couple more questions about this  
6 exhibit, which we're still on, Deposition Exhibit 4,  
7 which is the state House reapportionment Expert  
8 report.

9 On Page 19, I want to go back to that good  
10 faith language. What, in your expert opinion,  
11 constitutes good faith versus bad faith?

12 A The only thing I'm saying in that statement  
13 is that it was relatively easy for me to develop  
14 conceptual plans that had far number of counties  
15 affected. And given that it was that easy, that it  
16 seems to me that a good faith effort would have, you  
17 know, done the same thing.

18 Q So, are you trying to convey that the  
19 legislative -- that the Legislature was a bad actor  
20 when it drafted its maps or did so with a malicious  
21 intent or are you trying to convey something else?

22 A No, I don't use any of that language in here.  
23 All I say is that they did not make a good faith  
24 effort to reduce the splits.

25 So, whether they didn't try, because in the

1 criteria that was listed by the Legislature that  
2 said that you could have up to 30 splits, that they  
3 tried just to get to that and that's the result that  
4 they got, shows me that there was no effort made to  
5 reduce them, that there was no affirmative -- it  
6 doesn't mean that they were acting in bad faith. It  
7 just means that they weren't acting in good faith to  
8 try to reduce those according to the Tennessee  
9 Constitution.

10 Q Is there anything else that you're pointing  
11 at for that conclusion that the Legislature has not  
12 given a good faith effort besides your illustrative  
13 maps and your process in drawing them?

14 A No, I don't know anything about the  
15 Legislature or members of the Legislature or what  
16 their actions were.

17 All I know is that it was relatively easy to  
18 draw maps that actually reduced the number of county  
19 splits, while still holding other criteria at  
20 similar levels, similar -- the different trade-offs  
21 like compactness and deviation, holding those  
22 steady, you could still reduce the number of county  
23 splits.

24 Q Is there anything that you would change in --  
25 on Pages 18 and 19, in your conclusions? Is there

1 anything that you would like to change or amend?

2 A No. I have filed a rebuttal report where I  
3 talk about these plans once more.

4 Q Okay. All right. If we could turn to that,  
5 which is under Tab 4. Do you recognize that  
6 document?

7 A Yes. What is listed as Exhibit 5 is the  
8 Rebuttal Report of Plaintiffs' Expert Regarding  
9 Tennessee State House Reapportionment,  
10 December 2nd, 2022.

11 MR. RIEGER: And I would like to  
12 introduce that as Deposition Exhibit 5, please.

13 MR. TIFT: No objection.

14 (WHEREUPON, a document was marked as  
15 Exhibit Number 5.)

16 BY MR. RIEGER:

17 Q All right. When did you begin working on  
18 this rebuttal expert report?

19 A This report would have come after I was  
20 delivered the response reports of Mr. Himes and --  
21 or expert reports of Mr. Himes and Mr. Sean Trende,  
22 which don't have dates on them.

23 Q Would you say that you started work on these  
24 in November?

25 A Yeah. I think it was mid-November.

1 Q Okay. Who wrote the first draft of this  
2 report?

3 A I wrote this draft.

4 Q Okay. Did anyone provide input into this  
5 rebuttal report?

6 A Yes.

7 Q Who?

8 A Bernard Grofman.

9 Q Okay. What input did he provide?

10 A He helped me to shape the language to be a  
11 rebuttal of the reports that it's responding to. As  
12 I mentioned earlier, I've never served as an expert  
13 witness and wasn't sure how to answer the questions  
14 found in those documents.

15 Q What specifically did -- what portions of  
16 this expert report were impacted by Dr. Grofman's  
17 suggestions?

18 A Mostly the formatting, the idea of ordering  
19 these things with numbers so that it would be easy  
20 for the judges to refer to the points made.

21 Q And is there anything else that Dr. Grofman  
22 did or suggested regarding this rebuttal report?

23 A He suggested that I separate out the  
24 undisputed facts with the facts -- with the --  
25 sorry.

1           The undisputed facts with the legal claims  
2 that are made because I am an expert on the facts  
3 and not on the law.

4       Q       Did Dr. Grofman make any suggestions  
5 regarding the content as opposed to form?

6       A       Not other than simply, as I said, to list out  
7 each of the undisputed facts, but not -- I mean, he  
8 had not read any of the previous reports, so there  
9 was no way for him to provide any substantive  
10 feedback because he had -- I had not shared with him  
11 the reports of this case.

12      Q       Did anybody besides Dr. Grofman provide input  
13 into this report?

14      A       Just counsel.

15      Q       Did they provide any substantive changes to  
16 the content?

17      A       I don't believe any substantive changes, and  
18 actually very little input at all in this report.

19      Q       Okay. Were you provided any documents or  
20 information from anyone that was used to draft this  
21 rebuttal report?

22      A       This is a response to Mr. Trende and  
23 Mr. Himes. So, those reports were provided.

24      Q       Anything else?

25      A       No.

1 Q Okay.

2 A Excuse me. Clarification. I was also  
3 provided the incumbent information that I used for  
4 this report. I had not had that prior to this  
5 report.

6 Q Did you look at -- besides the incumbent data  
7 and the expert reports of Doug Himes and Sean  
8 Trende, did you use any additional data besides what  
9 I've just mentioned and that data that was listed in  
10 Roman III of your House expert report?

11 A There's no new data in these reports.

12 Q Okay.

13 A Other than the incumbent.

14 Q So, walk me through drafting this rebuttal  
15 report, if you could.

16 A I drafted a first draft, called Dr. Grofman  
17 and asked him if he had a chance to read it. Spent  
18 about an hour on the phone with him and realized it  
19 was actually his birthday, felt very embarrassed  
20 that I had asked him to help me draft a report on  
21 his birthday.

22 And as I said, he helped me rearrange things  
23 in a way that would make more sense for judges.

24 Q This plan includes two additional maps; is  
25 that correct?

1 A That is right.

2 Q Okay. How did you draw Cervas House Map 13c  
3 on Page 3?

4 A Cervas House Map 13c starts with my previous  
5 13b and then reconfigures District 80 to be  
6 identical to what the House Legislature had passed  
7 in the enacted bill.

8 And then made changes in the districts  
9 surrounding that, such that we could -- continued to  
10 keep the number of county splits as low as possible,  
11 while now maintaining the configurations of two  
12 additional districts.

13 Q Could you walk me through Cervas House  
14 Map 13d, starting on Page 4 and going to Page 5.

15 A Sure. So, Cervas d starts from -- I'm sorry.  
16 Cervas 13d starts from 13c and attempts to address  
17 the critiques found in the reports of Mr. Himes and  
18 Mr. Trende, that I had failed to account for  
19 considerations of not pairing incumbents and core  
20 retention, preserving the cores of the prior  
21 districts.

22 And so, I took Cervas Map 13c, and where I  
23 could, I adjusted the lines such that they more  
24 closely approximated the 2012 map. In some cases,  
25 it required more significant changes to match --

1 there are several instances in Mr. Himes' report  
2 where he says that districts from 2012 had been  
3 carried over to the 2022 map that I had changed.  
4 And so, I would move those back so that they were  
5 the same and then draw the rest of the surrounding  
6 districts as approximate as I could to the 2012 map.

7           And the result was that I created a map with  
8 still having only 24 county splits, now having a  
9 lower overall deviation than the enacted plan,  
10 having a lower average deviation than the enacted  
11 plan, having a higher compactness score than the  
12 enacted plan, having the exact same core retention  
13 as the enacted plan, and having the same number of  
14 incumbents paired as the enacted plan.

15 Q       And is it your belief that both -- sorry.  
16 Strike that.

17           Is it your opinion that both Cervas House  
18 Maps 13c and 13d comply with state and federal  
19 requirements for redistricting?

20 A       Subject to what I said earlier about the  
21 Voting Rights Act, contingent on the enacted plan  
22 not violating the Voting Rights Act, then I believe  
23 that these maps do comply with all state and federal  
24 law. And that includes even if it is interpreted  
25 that the urban counties are not allowed to be split.

1 So, Shelby County contains exactly 13 districts.

2 Q So, for 13c and 13d, just like the ones in  
3 the earlier report, you did not do a Voting Rights  
4 Act analysis?

5 A I did not -- I was not charged -- I was not  
6 hired to do a Voting Rights Act analysis. As far as  
7 I understand -- I have not read the court documents,  
8 but my understanding is that there's no challenge on  
9 the grounds of the Voting Rights Act, so I did not  
10 perform that analysis.

11 In every area in which there is a district  
12 sufficient -- with sufficient populations to draw,  
13 there are the same number of majority and minority  
14 districts found in Maps 13c and 13d as in the  
15 enacted plan. So, as long as the enacted plan is  
16 compliant with the Voting Rights Act, so are both of  
17 these illustrative plans.

18 Q Going to Page 5 and Page 6, is there anything  
19 that you want to add or change?

20 A I know there was a line -- let me see if I  
21 can find it. (Reviewing document.)

22 It's actually not in the conclusion. It's on  
23 Page 4, where I say that it has an identical overall  
24 deviation in Map 13d, but actually, it has an  
25 improved overall deviation. It's lower than the

1 enacted plan.

2 Q And how would you compare the -- instead of  
3 overall deviation, how did the two maps compare?  
4 The enacted map and 13d, how do they compare in  
5 terms of average deviation?

6 A On the enacted plan, the average deviation is  
7 3.28 percent and on my 13d plan, it's 3.16 percent.

8 Q Okay.

9 A Which I will note were both relatively high,  
10 but I preserved so much of the enacted plan -- in  
11 fact, I preserved 90 percent of the enacted plan  
12 in 13d. So, it's very hard to improve on many of  
13 the traditional redistricting criteria when you  
14 preserve that much. Yet, I still eliminated six  
15 county cuts in the process.

16 Q So, I want to make sure that we've -- I want  
17 to make sure I understand your understanding, if  
18 that makes sense, of the guidelines that you use,  
19 without getting into the issues where there is some  
20 uncertainty.

21 So, in terms of requirements that you looked  
22 at -- if I could direct you to what has been  
23 previously marked as Deposition Exhibit 6 under  
24 Tab 5. Are you familiar with that document?

25 A This is the expert report of Mr. Himes that

1 was prior to the report that -- it was delivered to  
2 me prior to my writing of that other report.

3 MR. RIEGER: Okay. I would like to  
4 introduce this as Deposition Exhibit 6.

5 MR. TIIFT: No objection.

6 (WHEREUPON, a document was marked as  
7 Exhibit Number 6.)

8 BY MR. RIEGER:

9 Q If I could get you to flip to Page 16.  
10 Do you see the list of what is described as "six  
11 guidelines and two practices"?

12 A I do see this list.

13 Q Okay. Ignoring the final two bullet points,  
14 are those the six guidelines that you followed?  
15 Sorry. Strike that.

16 Are those guidelines that you followed?

17 A (Reviewing document.)

18 With the noted exceptions of whether the plan  
19 complies with the Voting Rights Act, again, that's  
20 subject to whether the enacted plan is compliant  
21 with the Voting Rights Act. But other than that,  
22 yes.

23 Q Okay. Thank you.

24 So, if I could get you to flip back to  
25 Deposition Exhibit 5. On Page 2, Item Number 1, you

1 acknowledge that your initial maps from your report  
2 had non-contiguous census blocks.

3 A Uh-huh, yes.

4 Q Was that an error or was that done not in  
5 good faith?

6 A I certainly would never submit a map that had  
7 noticeable errors in them. And I'd like to, if I  
8 could, report -- go back, if we could, to Exhibit  
9 Number 6 on Page 38 and just showcase the language  
10 of Mr. Himes on this issue. It's continuing on from  
11 Page 37.

12 It says, "While an over-reliance on computers  
13 can be detrimental in the redistricting process,  
14 computer programs can be useful tools to find  
15 non-contiguous areas within plans." I a hundred  
16 percent agree with that.

17 I was using Dave's Redistricting app, and  
18 unfortunately the precincts in Tennessee are a bit  
19 bizarre. And when we split some of the precincts, I  
20 think, unfortunately, there were zero population,  
21 what I would call slivers, individual census blocks,  
22 that were assigned to the wrong districts.

23 They had no meaningful impact on the plans.  
24 They had -- not one of them had even one single  
25 individual living in them, so it affected none of

1 the numbers in the plans. The only thing it  
2 affected was the compactness. And those errors  
3 actually reduced the compactness.

4 So, in fixing those errors, it had the effect  
5 of actually increase the compactness of the plans.

6 Q If I could point you to what has been  
7 previously marked as Deposition Exhibit -- or what  
8 has been marked, not previously, as Deposition  
9 Exhibit 8 under Tab 7.

10 Do you recognize this document?

11 A This is a document that I submitted, I guess  
12 in March of 2022. So, my engagement was earlier  
13 than what I said earlier when I said April.

14 MR. RIEGER: Okay. If I could get this  
15 introduced as Deposition Exhibit 8.

16 MR. TIFT: No objection.

17 (WHEREUPON, a document was marked as  
18 Exhibit Number 8.)

19 BY MR. RIEGER:

20 Q You drew several maps as part of this  
21 affidavit; is that right?

22 A The maps that were developed in this plan, I  
23 drew two seed maps. Seed maps were maps that were  
24 to be fed to a computer program.

25 These maps were -- they're basically just

1 compliant with contiguity in equal population and  
2 have no other objective. They are random plans.  
3 They just -- they have zero objectives.

4 Q If I could get you to draw your attention to  
5 Deposition Exhibit 1, which is underneath Tab 9. Or  
6 maybe it's at the front of your book.

7 Are you familiar with this document?

8 A Yes. This is a response to that -- the -- my  
9 initial report for this (indicating).

10 MR. RIEGER: If I could get it admitted  
11 as Deposition Exhibit 1.

12 MR. TIFT: No objection.

13 MR. RIEGER: Thank you.

14 (WHEREUPON, a document was marked as  
15 Exhibit Number 1.)

16 BY MR. RIEGER:

17 Q In this affidavit, this affidavit sets forth  
18 several instances where the seed maps referenced in  
19 your affidavit, which is Depo Exhibit 8, has issues  
20 in a couple of places with contiguity.

21 Do you agree with that?

22 A I'm not sure I remember that there was  
23 contiguity issues.

24 Q If I could point you to Page 3.

25 A Ah. So, these, as I just stated a minute

1 ago, the precinct boundaries in Tennessee can be  
2 quite bizarre. All of the plans that were developed  
3 under this report were only built out of Tennessee  
4 precincts. And so, some of the precincts themselves  
5 are not contiguous. And that's -- the precincts are  
6 a product of the election boards.

7 Q So, even for someone who has drawn maps for  
8 New York, served as a special master, served as an  
9 assistant to special master, redistricting and map  
10 drawing is still an incredibly complicated process?

11 A Redistricting is an incredibly complicated  
12 process.

13 Q Okay. Is it -- and would you agree that  
14 sometimes errors can just happen, especially in  
15 terms of contiguity with a state as complicated as  
16 Tennessee?

17 A I agree.

18 Q Okay. And when you had certain contiguity  
19 errors in your affidavit and the expert reports,  
20 would you characterize those as errors rather than  
21 bad faith?

22 A Yes. Given time, I would have been able to  
23 clean this up to ensure that there were not these  
24 problems. Again, these were generated by a computer  
25 out of the precinct boundaries. And technical

1 errors do sometimes crop up in redistricting.

2 Technical corrections were given in the maps  
3 in New York after they were finalized by the Court.

4 Technical corrections were given in Virginia in  
5 Bethune-Hill. Technical corrections were given in  
6 Navajo Nation. States often have to issue technical  
7 corrections after the fact.

8 MR. RIEGER: Okay. If we could take a  
9 break, just a quick five-minute one, I want to  
10 confer with my folks, but I think we may be getting  
11 near the end. I just want to make sure there's  
12 nothing else that I need to think about.

13 (Recess observed.)

14 BY MR. RIEGER:

15 Q You understand you're still under oath?

16 A Still under oath, yes.

17 Q And you still understand that the rules we  
18 discussed at the start of the day still apply?

19 A Yes, sir.

20 Q Okay, fantastic.

21 A follow-up question about your rebuttal  
22 report maps. Did Zach Griggy help you at all with  
23 the rebuttal report?

24 A Only with the drawing of the maps.

25 Q Okay. So, he did the -- he worked the

1 software?

2 A Yes.

3 Q Okay. Did he do anything else besides work  
4 the software?

5 A No.

6 Q Okay. Did he make any decisions about where  
7 the lines should be?

8 A He helped -- he helped to figure out what are  
9 some of the better configurations.

10 Q Okay. I just want to make sure, since we had  
11 an April and then we had a March in terms of when  
12 you were engaged, I just want to be clear for the  
13 record. When were you first contacted about being  
14 an expert?

15 A I really should consult my files that would  
16 say when that happened. I have an engagement  
17 letter. I don't know the dates on these things.  
18 Scott should have brought them with him.

19 Q Well, let me ask it a little bit differently.  
20 Not engagement. When were you first contacted about  
21 the possibility?

22 A It would have been -- the engagement and the  
23 possibility were at the same time.

24 Q Okay.

25 A I don't think there were very many

1 conversations. I don't think there were any  
2 conversations, actually.

3 Q Who contacted you? Was it counsel or was it  
4 somebody else?

5 A It was counsel.

6 Q Okay. And then, one last question I wanted  
7 to ask because I don't think we got there. If I can  
8 point you to -- well, if I refer to the House  
9 Democratic Concept Map that's referenced in your  
10 initial expert report, will you know what I'm  
11 talking about?

12 A Can you say that one more time? The House --

13 Q The House Democratic Concept Map.

14 A Yes.

15 Q Okay. Do you know who drew that?

16 A I do not.

17 MR. RIEGER: Okay. I have no further  
18 questions.

19 MR. TIFT: I don't have any questions  
20 either.

21 One housekeeping thing, what's behind  
22 Tab 9 is really the second half of Tab 8, so why  
23 don't we admit it? His affidavit was in two PDFs.

24 MR. RIEGER: I think my paralegal did  
25 that.

1                   THE WITNESS: I've got nothing under  
2 Tab 9.

3                   MR. RIEGER: Let's combine -- okay.  
4 Let's go through the exhibits and just get that  
5 knocked out. I know one of y'all has been jotting  
6 this down.

7                   So, Deposition Exhibit 2 --

8                   MR. TIFF: Let's start with Exhibit 1.

9                   MR. RIEGER: Exhibit 1 is the Affidavit  
10 of Doug Himes.

11                  Exhibit 2 is the Notice of Deposition.

12                  Exhibit 3 is the Report of Plaintiffs'  
13 Expert Regarding Tennessee State Senate  
14 Reapportionment.

15                  Exhibit 4 is Report of Plaintiffs'  
16 Expert Regarding Tennessee State House  
17 Reapportionment.

18                  Exhibit 5 is Rebuttal Report of  
19 Plaintiffs' Expert Regarding Tennessee State House  
20 Reapportionment.

21                  Exhibit 6 is the Expert Report of  
22 Douglas Himes.

23                  We did not admit 7.

24                  We did admit 8, which is the Affidavit  
25 of Jonathan Cervas.

1                   MR. TIIFT: That's the issue. It's  
2 really the first 12 pages of the like 20-page  
3 affidavit.

4                   MR. RIEGER: And we will -- can we go  
5 ahead and admit as Depo Exhibit 9 the second half?

6                   MR. TIIFT: Yes.

7                   MR. RIEGER: Okay. Just to make clear,  
8 because it's already marked.

9                   MR. TIIFT: It's already labeled that  
10 way, so yes.

11                  MR. RIEGER: Okay. So, Deposition 8 --  
12 Deposition Exhibit 8 is the document titled  
13 Affidavit of Jonathan Cervas, and Deposition  
14 Exhibit 9 is the second half of that report, which  
15 begins with Page Number 13 and at the top says  
16 "TN\_Apple\_Test\_3\_0288."

17                  MR. TIIFT: Agreed.

18                  (WHEREUPON, a document was marked as  
19 Exhibit Number 9.)

20                  MR. RIEGER: And I think that's  
21 housekeeping.

22                  MR. TIIFT: That's it. I'm done. I  
23 don't have anything.

24                  MR. RIEGER: Okay. Off the record.

25                  THE REPORTER: Do you want him to read

1 and sign?

2 MR. TIIFT: Yes.

3 THE REPORTER: And a copy?

4 MR. TIIFT: Yes, we'll take a copy.

5 MR. RIEGER: Regular turnaround is fine.

6 FURTHER DEPONENT SAITH NOT

7 (Proceedings concluded 3:30 p.m.)

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

## **E R R A T A      P A G E**

I, JONATHAN R. CERVAS, having read the foregoing deposition, Pages 1 through 157, do hereby certify said testimony is a true and accurate transcript, with the following changes (if any):

**PAGE LINE**      **SHOULD HAVE BEEN**

---

JONATHAN R. CERVAS

---

**Notary Public:**

### **My Commission Expires:**

Reported by: Jerri L. Porter, RPR, CRR, LCR

## **REPORTER'S CERTIFICATE**

**STATE OF TENNESSEE**

## COUNTY OF Davidson

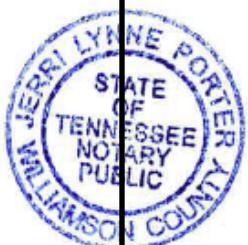
I, Jerri L. Porter, RPR, CRR, Licensed  
Porter, with offices in Nashville,  
, hereby certify that I reported the  
deposition of JONATHAN R. CERVAS by  
dictation to the best of my skills and  
, and thereafter the same was reduced to  
written form by me. I am not related to any of  
the parties named herein, nor their counsel, and  
have no interest, financial or otherwise, in the  
proceedings.

I further certify that in order for this document to be considered a true and correct copy, it must bear my original signature, and that any unauthorized reproduction in whole or in part and/or transfer of this document is not authorized, will not be considered authentic, and will be in violation of Tennessee Code Annotated 39-14-104, Theft of Services.

*John L. Post*

Jerr1 L. Porter, RPR, CRR, LCR  
Elite-Brentwood Reporting Services  
Notary Public State of Tennessee

My Notary Public Commission Expires: 3/3/2026  
LCR 335 - Expires: 6/30/2024



<b>Exhibits</b>	<b>1</b>	<b>2</b>	
<b>Ex 01 -</b> <b>Jonathan Cerva</b> <b>s</b> 3:9 150:5,11,15 155:8,9	<b>1</b> 40:4,19 52:22 61:7 85:25 147:25 150:5,11,15 155:8,9	<b>2</b> 10:14,15,21 11:2 48:20 50:22 60:24 61:8 121:19 126:1,11 147:25 155:7,11	<b>3,000</b> 74:15 <b>3.16</b> 146:7 <b>3.28</b> 146:7 <b>30</b> 37:8 39:22,24 40:11 131:20 132:3 138:2
<b>Ex 02 -</b> <b>Jonathan Cerva</b> <b>s</b> 3:10 10:14,21 11:2 155:7,11	<b>10</b> 9:21 56:22 57:6 85:20 116:22 117:1,5 136:6,10, 11	<b>20</b> 103:16 <b>20-page</b> 156:2 <b>2010</b> 12:15 <b>2011</b> 30:4 31:1 52:9	<b>31st</b> 9:19 <b>37</b> 148:11 <b>38</b> 148:9 <b>387</b> 6:5 <b>3:30</b> 157:7
<b>Ex 03 -</b> <b>Jonathan Cerva</b> <b>s</b> 3:12,14 11:12,15 19:7 100:13 101:18,20 108:7 155:12	<b>100</b> 31:7 35:5 <b>10th</b> 9:23 108:5 <b>11</b> 59:20 85:20,25 <b>12</b> 110:16 156:2	<b>2012</b> 128:17,19 143:24 144:2,6 <b>2016</b> 96:2 <b>2017</b> 86:11 88:2 <b>2018</b> 50:2,8 95:8 <b>2019</b> 93:19 <b>2020</b> 13:20 33:22 55:4 60:1 81:8 95:9	<b>4</b> <b>4</b> 93:13 107:24 108:19,23 137:6 139:5 143:14 145:23 155:15 <b>40</b> 15:22
<b>Ex 04 -</b> <b>Jonathan Cerva</b> <b>s</b> 3:15 107:24 108:19,23 137:6 155:15	<b>13.5a</b> 114:1 118:22 119:1 <b>13.5b</b> 114:1 118:22 119:1	<b>2021</b> 19:17 81:1 90:20 92:20 95:9 <b>2022</b> 9:18,19,21, 24 10:6,10 11:22 12:19 15:3 39:2 101:24 108:5 114:23 128:6 134:18 136:16 139:10 144:3 149:12 <b>20th</b> 69:2	<b>5</b> <b>5</b> 35:14 41:10 44:7 76:23 116:21 117:2,4,8,10,12, 13,23 118:6,7 139:7,12,15 143:14 145:18 146:24 147:25 155:18 <b>50</b> 103:18 <b>50.01</b> 120:13 <b>5000</b> 6:4 <b>51</b> 128:4 <b>533</b> 132:15
<b>Ex 05 -</b> <b>Jonathan Cerva</b> <b>s</b> 3:18 139:7,12,15 147:25 155:18	<b>13a</b> 113:11,20 116:7 118:22 120:4 127:14	<b>21</b> 132:2 <b>23</b> 134:25 <b>24</b> 8:22 144:8 <b>29th</b> 9:18 <b>2nd</b> 10:6 139:10	<b>6</b> <b>6</b> 52:23,24 106:2 112:4 145:18 146:23 147:4,7 148:9 155:21
<b>Ex 06 -</b> <b>Jonathan Cerva</b> <b>s</b> 3:20 146:23 147:4,7 148:8,9 155:21	<b>13b</b> 113:16,19,21 118:22 120:9 143:5		
<b>Ex 08 -</b> <b>Jonathan Cerva</b> <b>s</b> 3:22,24 149:9,15, 18 150:19 156:12	<b>13c</b> 143:2,4,16,22 144:18 145:2,14		
<b>Ex 09 -</b> <b>Jonathan Cerva</b> <b>s</b> 3:23 156:5,14,19	<b>13d</b> 143:14,16 144:18 145:2,14, 24 146:4,7,12		
	<b>14</b> 113:23		
	<b>14a</b> 113:22 118:21		
	<b>15</b> 25:21		
	<b>16</b> 106:10 147:9		
	<b>1790</b> 33:22		
	<b>18</b> 131:1 138:25		
	<b>19</b> 131:4 137:9 138:25		
	<b>1900s</b> 42:18 43:23		
	<b>1973</b> 60:3		
		<b>3</b>	
		<b>3</b> 11:5,12,15 19:7 41:1 46:18 65:20 100:13 101:18,20 108:7 143:3 150:24 155:12	
			<b>7</b>
			<b>7</b> 54:21 61:21

<p>130:9 149:9 155:23</p> <hr/> <p><b>8</b></p> <hr/> <p><b>8</b> 55:16 149:9,15, 18 150:19 154:22 155:24 156:11,12</p> <p><b>80</b> 113:20 143:5</p> <hr/> <p><b>9</b></p> <hr/> <p><b>9</b> 56:17 105:6 136:9 150:5 154:22 155:2 156:5,14,19</p> <p><b>90</b> 146:11</p> <p><b>97</b> 135:24</p> <p><b>99</b> 127:9 128:4</p> <p><b>9th</b> 10:10</p> <hr/> <p><b>A</b></p> <hr/> <p><b>ability</b> 8:22 134:16</p> <p><b>absolute</b> 75:25 129:21 130:23 131:16</p> <p><b>absolutely</b> 27:6 73:24 84:1</p> <p><b>academia</b> 36:17</p> <p><b>academic</b> 36:24</p> <p><b>acceptable</b> 126:5</p> <p><b>accepted</b> 38:1 78:15,17</p> <p><b>accepting</b> 111:16</p> <p><b>accessible</b> 82:13</p> <p><b>accidentally</b> 64:16</p> <p><b>account</b> 143:18</p> <p><b>accurate</b> 8:23 12:2 13:23 49:16</p> <p><b>accurately</b> 9:2 11:23</p> <p><b>achieve</b> 58:11,14</p>	<p><b>acknowledge</b> 148:1</p> <p><b>acquainted</b> 43:20</p> <p><b>act</b> 67:3 71:1 88:22 120:8 121:8,19 122:2,23 124:13,24 125:1 126:13,22 132:10 144:21,22 145:4, 6,9,16 147:19,21</p> <p><b>acting</b> 67:2 138:6, 7</p> <p><b>actions</b> 138:16</p> <p><b>actor</b> 137:19</p> <p><b>actual</b> 65:15 71:20 72:6</p> <p><b>add</b> 51:21 106:11 130:25 145:19</p> <p><b>added</b> 12:25 13:11 26:15 66:10 135:9</p> <p><b>adding</b> 82:7</p> <p><b>additional</b> 12:1 47:12 68:5 113:25 142:8,24 143:12</p> <p><b>address</b> 5:24,25 6:1,3 56:1 74:17 78:22,24 143:16</p> <p><b>addresses</b> 79:1</p> <p><b>adhere</b> 123:20</p> <p><b>adhered</b> 102:5</p> <p><b>adjusted</b> 143:23</p> <p><b>administrative</b> 114:11</p> <p><b>admit</b> 108:17,19 154:23 155:23,24 156:5</p> <p><b>admitted</b> 150:10</p> <p><b>adopt</b> 20:17,18</p> <p><b>adopted</b> 21:14 51:5 52:8,13 74:14 87:12 114:20 128:9</p> <p><b>adopting</b> 127:16</p>	<p><b>adopts</b> 90:8</p> <p><b>advance</b> 82:3</p> <p><b>advanced</b> 14:9 17:3 18:7 48:2 97:11</p> <p><b>adviser</b> 33:20</p> <p><b>affect</b> 8:22 55:10 56:11 63:17</p> <p><b>affected</b> 61:25 135:7 137:15 148:25 149:2</p> <p><b>affects</b> 39:2</p> <p><b>affidavit</b> 9:17,18 149:21 150:17,19 151:19 154:23 155:9,24 156:3,13</p> <p><b>affirmative</b> 138:5</p> <p><b>affirmed</b> 20:18</p> <p><b>African</b> 120:18 123:8 124:18</p> <p><b>age</b> 120:2 125:12</p> <p><b>agree</b> 136:3 148:16 150:21 151:13,17</p> <p><b>Agreed</b> 156:17</p> <p><b>agreement</b> 88:12</p> <p><b>ahead</b> 32:23 128:13 129:8 130:8 133:7 156:5</p> <p><b>alcohol</b> 8:21</p> <p><b>Alex</b> 5:11,18 108:17</p> <p><b>Alexander</b> 16:13</p> <p><b>all-day</b> 95:14</p> <p><b>alleviated</b> 119:4</p> <p><b>allocated</b> 135:12</p> <p><b>allowed</b> 22:24 66:25 122:5 131:22 135:3 144:25</p> <p><b>alphabetically</b> 62:24</p> <p><b>amend</b> 139:1</p>	<p><b>America</b> 16:19 67:5</p> <p><b>American</b> 14:5, 10,14 33:18 37:16 38:14 39:1,3 45:13,15,18,19,25 46:4 84:10 96:18, 23 98:8 100:22 123:8</p> <p><b>Americans</b> 120:18 124:18</p> <p><b>Amicus</b> 62:10</p> <p><b>amount</b> 42:23 69:8 77:7 128:24 131:22</p> <p><b>analyses</b> 23:2,13, 16 24:1,4,23 25:24 27:14,20 36:4 73:22 123:11,23 124:7, 21</p> <p><b>analysis</b> 14:9 17:15 20:24 22:10 23:4 26:13 31:1 35:2 50:25 51:14 52:20 54:2 59:24 65:7 120:24 122:3,4 123:14,18 124:20 125:21 126:14,21 145:4, 6,10</p> <p><b>analytical</b> 131:17, 19</p> <p><b>analyze</b> 22:7 41:21 42:6 122:22</p> <p><b>analyzed</b> 28:5 134:23</p> <p><b>analyzing</b> 53:14</p> <p><b>Angela</b> 96:4</p> <p><b>annual</b> 14:21 15:13</p> <p><b>answering</b> 7:7</p> <p><b>anticipate</b> 16:25 17:5 81:18</p> <p><b>anybody's</b> 73:13</p> <p><b>apologize</b> 7:5 10:15 40:3 133:6</p>
---	---	---	--

<b>app</b> 23:8 73:1 148:17	129:5,10 149:13 153:11	<b>assisted</b> 72:5 <b>assisting</b> 23:12 <b>assume</b> 8:2 17:21 81:12 <b>assuming</b> 41:17 <b>assumption</b> 126:20 <b>Asymmetry</b> 96:12 <b>attempt</b> 7:24 44:19 128:1 <b>attempted</b> 27:25 113:1 128:8,10 <b>attempts</b> 113:19 143:16 <b>attended</b> 55:20 71:9 <b>attention</b> 119:21 150:4 <b>attorney</b> 5:11,15, 19 68:17 <b>attribute</b> 133:4 <b>Austin</b> 92:21 <b>author</b> 16:18 35:23,25 36:2 48:23 49:24 53:20,22,23 57:9 61:11 62:23 81:18,19 98:21,23 <b>Assembly</b> 5:21 127:21 <b>Assessment</b> 33:21 <b>assign</b> 81:24 <b>assigned</b> 14:22 15:10 55:11 148:22 <b>assist</b> 110:12 114:3 <b>assistance</b> 31:19 86:22,24 114:4,16 <b>assistant</b> 5:15 46:15,17 48:2 70:23 86:6,14,16 87:6 114:21,24 115:1 151:9 <b>assistants</b> 70:21	<b>aware</b> 102:18,21 111:12 <b>axis</b> 60:7,9 <b>axes</b> 60:4
<b>B</b>			
		<b>B.A.</b> 47:5	
		<b>back</b> 39:8 52:22 59:14 67:8 70:2 85:16 90:8 100:2 108:6 137:9 144:4 147:24 148:8	
		<b>background</b> 11:24 109:11 114:17	
		<b>bad</b> 64:25 137:11, 19 138:6 151:21	
		<b>Baker</b> 23:1	
		<b>balance</b> 132:7	
		<b>ballpark</b> 103:20, 22	
		<b>bar</b> 49:18	
		<b>base</b> 53:6,11	
		<b>based</b> 20:24 30:5 32:9 34:8 42:12 79:24 87:9 92:5	
		<b>baseline</b> 53:11 113:11	
		<b>Bases</b> 52:25	
		<b>basic</b> 26:17	
		<b>basically</b> 14:23 23:8 96:7 99:8 113:2,12 124:22 149:25	
		<b>basis</b> 53:19	
		<b>Bath</b> 68:13,14	
		<b>begin</b> 68:11 139:17	
		<b>beginning</b> 15:16 59:17 71:8	
		<b>begins</b> 156:15	
		<b>behavior</b> 14:16 45:20	

<b>belief</b> 129:20 130:3,15 144:15	<b>book</b> 16:12,13,22 29:16 35:13 44:2 77:17 82:9,13 111:18 112:11 150:6	<b>65:4</b> <b>California</b> 32:5 33:10 37:2,4 46:9 71:19 114:19	31:3 46:13,19,24 47:3 77:21 86:18 87:1,13,14,16,18, 23 88:1,12,17,20, 21 89:2,17,21,24 124:1,17 143:24
<b>benefit</b> 135:9	<b>books</b> 29:12	<b>call</b> 36:15 39:19 50:3,11 59:8 105:5 114:1 148:21	<b>category</b> 125:15
<b>Bernard</b> 33:20 34:5 35:18 36:15 70:24 81:15 114:21 123:17 140:8	<b>bookshelf</b> 77:17	<b>called</b> 5:5 14:7 16:12 31:21 113:21 116:22 142:16	<b>caucuses</b> 28:24
<b>Bernie</b> 36:15	<b>border</b> 77:22 114:2 133:12 134:1 135:1,4	<b>calling</b> 122:11	<b>causal</b> 47:13,18
<b>Bethune-hill</b> 88:3 94:20,24 152:5	<b>born</b> 25:20	<b>calls</b> 39:18	<b>caused</b> 133:25
<b>Beto</b> 93:1	<b>boroughs</b> 76:19	<b>Campaigning</b> 83:13	<b>census</b> 20:25 22:13 53:6,7 55:4, 5,9 61:24 70:14 95:9 125:10 148:2,21
<b>bias</b> 22:19 59:23 74:6 83:9,11	<b>bottom</b> 60:24 132:5	<b>Campaigns</b> 84:14	<b>certiorari</b> 31:22
<b>Biased</b> 83:4	<b>boundaries</b> 44:14,15 54:17 151:1,25	<b>candidate</b> 35:8	<b>Cervas</b> 5:3,10 6:2 9:17,21,23 10:6, 21 143:2,4,13,15, 16,22 144:17 155:25 156:13
<b>big</b> 77:7	<b>boundary</b> 119:2,5	<b>candidates</b> 121:21	<b>chair</b> 20:5,6,11,23 21:4 22:6,7 34:5
<b>biggest</b> 77:10	<b>bounds</b> 22:24 117:20	<b>capable</b> 114:12	<b>chairperson</b> 20:4
<b>bill</b> 143:7	<b>break</b> 8:7,11,13, 14 32:3,24 59:7,9, 10 136:20 152:9	<b>capacity</b> 20:10 28:5	<b>challenge</b> 67:10 130:18 145:8
<b>binder</b> 100:13	<b>breakdown</b> 72:9, 23	<b>Capital</b> 96:14	<b>challenged</b> 31:18 53:14 117:20
<b>bios</b> 71:25	<b>breaking</b> 133:25	<b>Capitol</b> 93:19	<b>challenges</b> 67:12 117:14
<b>bipartisan</b> 20:17 21:25 94:8	<b>breaks</b> 99:6	<b>career</b> 18:17	<b>chamber</b> 111:1
<b>birthday</b> 142:19, 21	<b>briefly</b> 136:17	<b>careful</b> 121:2	<b>chambers</b> 22:2 42:5
<b>bit</b> 8:13,19 14:10 15:8 24:19 40:4 44:17 73:8 81:12 86:6,9 99:7 148:18 153:19	<b>bright-line</b> 116:25 135:19,22	<b>Carnegie</b> 6:3 13:22 14:1 18:1, 22 19:6,10,13	<b>chance</b> 97:14 98:4 142:17
<b>bizarre</b> 53:17 148:19 151:2	<b>brilliant</b> 36:13	<b>Carole</b> 34:6	<b>chancellor</b> 20:9
<b>black</b> 120:1	<b>broad</b> 14:13 15:14 93:24	<b>Carolina</b> 115:1	<b>change</b> 13:7 80:5 106:11 138:24 139:1 145:19
<b>blind</b> 98:16 99:15	<b>broadly</b> 16:8 48:12	<b>Carr</b> 23:1	<b>changed</b> 13:6,10 74:12 118:21 144:3
<b>block</b> 77:22 126:6	<b>brought</b> 29:1 70:24 98:8 153:18	<b>carried</b> 144:3	<b>changing</b> 29:3
<b>blocks</b> 53:7 148:2,21	<b>built</b> 53:5,9 151:3	<b>case</b> 5:18 10:1 12:23 17:1 30:1,2 36:20 46:25 49:1 52:10,12 65:22,23 66:6 67:22 68:16 77:19 88:15 90:12 94:21 103:9 120:9 141:11	<b>chapter</b> 35:12 40:2,6,9 82:8
<b>blog</b> 63:4 64:9 65:2	<b>bullet</b> 147:13	<b>cases</b> 6:11 12:14 22:25 25:13 29:21	
<b>board</b> 90:8			
<b>boards</b> 151:6	<b>C</b>		
<b>Bodies</b> 84:3 95:25	<b>Cabinet</b> 83:23		
<b>body</b> 111:1	<b>calculate</b> 43:1		

<b>chapters</b> 41:11, 12	18:9,10,13 50:13 91:4	<b>combinations</b> 114:12	4
<b>characterize</b> 151:20	<b>classes</b> 14:3,6 15:5 17:22,24 33:13,14 46:7 47:7,10 50:14 81:25	<b>combine</b> 122:5 155:3	<b>compared</b> 108:12
<b>charge</b> 124:1,3	<b>clause</b> 30:5 49:22	<b>comfortable</b> 117:3 120:14	<b>comparing</b> 34:23 52:6
<b>charged</b> 33:25 114:10 145:5	<b>clean</b> 151:23	<b>comment</b> 68:23 77:4 89:22	<b>competitive</b> 34:14,16
<b>check</b> 105:22	<b>clear</b> 7:13,16 32:19 72:12 90:5 109:7 123:4 153:12 156:7	<b>commenting</b> 63:6	<b>completely</b> 24:14 47:21 70:14
<b>checking</b> 27:23	<b>close</b> 98:14 118:5 120:10 129:5 136:10	<b>comments</b> 68:20 74:4,15,21	<b>compliance</b> 21:2 25:25 27:15,21 48:15 70:25 73:10,18 120:23 121:3 122:23 124:3,7 130:1
<b>chief</b> 5:20	<b>closely</b> 143:24	<b>commission</b> 20:20 21:25 22:1 25:1 28:2 30:13, 17 31:15 69:14 71:8	<b>compliant</b> 26:10 28:14 70:20 75:14,15 76:8 77:21 87:22 116:5,10 127:17 134:14,22 145:16 147:20 150:1
<b>choice</b> 33:14 96:20 121:22	<b>co-author</b> 35:18, 20,21 55:25 57:16 96:3	<b>commission's</b> 21:11,14 70:11	<b>complicated</b> 45:18 125:22 151:10,11,15
<b>choose</b> 20:4	<b>co-authored</b> 55:24	<b>committee</b> 19:18, 22,23 21:7 28:17 29:7 30:12 31:13 33:23,24 34:2,4 112:3 131:23 134:15	<b>complication</b> 54:18
<b>chose</b> 66:21	<b>co-authors</b> 55:19	<b>Common</b> 94:2	<b>complied</b> 121:1 126:22
<b>chosen</b> 66:19 134:9	<b>co-counsel</b> 5:18	<b>Commonwealth</b> 49:3	<b>complies</b> 11:20 126:12 147:19
<b>circle</b> 79:14,15	<b>coalition</b> 122:6, 24 123:5,7 125:19 126:5,6	<b>communications</b> 24:25 67:1	<b>comply</b> 25:13 26:9 115:13,20 122:6 124:5,13 130:12 144:18,23
<b>circuit</b> 123:3 126:4	<b>coalitions</b> 123:20	<b>communities</b> 57:6,18 58:13 59:3 71:15 74:17, 21,25 75:3,7	<b>complying</b> 124:9 129:22
<b>circumstance</b> 26:12 69:11	<b>codes</b> 52:24 53:5, 10,15 54:17,18	<b>community</b> 57:23 58:2,21,22, 24	<b>computer</b> 18:4 148:14 149:24 151:24
<b>circumstances</b> 80:11 123:5	<b>collaborate</b> 36:6, 8,12	<b>compact</b> 80:16	<b>computers</b> 64:17 148:12
<b>citizen</b> 25:4,7 125:12 133:1	<b>collaboration</b> 36:5 55:18	<b>compactness</b> 51:22,25 78:21 79:5,10,23 80:7,9, 14,21 82:17 92:1, 8,14 138:21 144:11 149:2,3,5	<b>concept</b> 17:13 22:21 44:1,10 58:1,8 96:8 110:16 117:4 134:19,22 135:14 136:13,15 154:9, 13
<b>citizen-submitted</b> 24:4	<b>collected</b> 125:9	<b>comparative</b> 33:19 45:25	
<b>citizens</b> 20:16 25:8 26:14 68:15, 24 69:19 121:15	<b>collectively</b> 20:3 109:2	<b>compare</b> 146:2,3,	
<b>city</b> 72:20 76:18	<b>College</b> 33:22 34:14,20 35:10 37:15 38:14 41:20,22 42:4 44:15 60:1,14,15 83:4,9,14 97:4 99:5,10		
<b>claiming</b> 58:9	<b>colloquially</b> 121:14		
<b>claims</b> 81:7 95:1 141:1			
<b>clarification</b> 45:2 105:18 109:23 142:2			
<b>clarify</b> 13:2 18:9 21:10 41:19 126:18			
<b>clarifying</b> 100:15			
<b>class</b> 14:4,5,8,9, 11,12,18,19,24 15:2 16:7,20 17:7			

<b>conception</b> 58:22	106:22 107:10	154:3	35:18,19 41:17 50:21 61:10,12 65:12 97:23 113:19 142:25
<b>concepts</b> 44:8 49:15 124:10	<b>considerable</b> 128:24	<b>contained</b> 102:25 110:23	<b>corrections</b> 152:2,4,5,7
<b>conceptual</b> 106:25 137:14	<b>consideration</b> 69:20	<b>content</b> 12:11 32:21 57:12 104:4,11 105:19 110:9 141:5,16	<b>correctly</b> 40:20 89:24 104:15 134:13
<b>concern</b> 60:16	<b>considerations</b> 143:19	<b>contents</b> 15:21 54:9 82:22	<b>councils</b> 72:20
<b>concerned</b> 61:13	<b>considered</b> 110:25 111:6,8	<b>context</b> 39:9	<b>counsel</b> 5:20 21:4 104:14 105:12,16 106:24 110:1,5,15 113:3 114:8 118:13 134:20 141:14 154:3,5
<b>concerns</b> 53:12	<b>Consortium</b> 47:23	<b>contiguity</b> 150:1, 20,23 151:15,18	<b>count</b> 55:6 85:23
<b>conclude</b> 106:16	<b>constantly</b> 98:6	<b>Contiguity-related</b> 64:10 80:24	<b>counted</b> 26:15
<b>concluded</b> 129:17 157:7	<b>constitutes</b> 137:11	<b>contiguous</b> 53:16 151:5	<b>counterfactual</b> 34:24 61:22
<b>conclusion</b> 40:14 106:10,12,13 131:2,20 138:11 145:22	<b>constitution</b> 28:7,8 30:6,8 49:5,17,18 52:17 55:15 59:4 67:15 75:1 77:23 87:22	<b>contingent</b> 66:5, 9 144:21	<b>counties</b> 52:3 70:15 76:15 78:5 105:13 113:8 114:13 118:24 130:4,17 131:6 135:7,8 137:14 144:25
<b>conclusions</b> 138:25	102:13,23 105:14 106:21 111:19 112:14 119:13 130:13,22 138:9	<b>continually</b> 135:6	<b>counting</b> 35:3,7
<b>Conditions</b> 84:17	<b>Constitution's</b> 61:15 107:8	<b>continue</b> 135:6	<b>county</b> 26:16 27:5 44:9,11 51:6,11
<b>confer</b> 152:10	<b>constitutional</b> 25:5 28:15 74:24 80:21 102:19 105:6,8 111:13,17 124:6 130:3 132:7	<b>continued</b> 143:9	52:17 64:14,15 65:17,18 74:1,5
<b>conference</b> 16:22 47:16 55:19,21,23 93:21	<b>constitutionally</b> 134:22	<b>continuing</b> 12:16 148:10	76:16,21,22 78:3 86:12 88:4 89:9, 10 99:16 102:7 106:17,22 107:9
<b>confidential</b> 21:20	<b>constitutions</b> 57:17,21 80:16 94:11,18	<b>contrary</b> 67:14	113:5,6,14,23,24 114:2,7,14
<b>confidentiality</b> 88:11	<b>constraint</b> 132:1	<b>contributed</b> 72:12 73:16	115:15,21 118:7, 10,19,21,23
<b>configurations</b> 56:5 143:11 153:9	<b>constraints</b> 131:8	<b>contributions</b> 57:11,15	119:2,5,6,11
<b>conflict</b> 120:8	<b>consult</b> 153:15	<b>controls</b> 56:10	129:22 130:12
<b>confusing</b> 124:10	<b>consultant</b> 20:14, 20 30:13 86:5	<b>conversations</b> 154:1,2	132:3,6,21,22,24 133:1,12,13,15, 18,22,24 134:1,5, 24 135:1,4,5,11, 13 138:18,22
<b>Congress</b> 37:17 42:4,5	<b>consulted</b> 21:2	<b>convey</b> 137:18,21	143:10 144:8 145:1 146:15
<b>congressional</b> 30:3,14,19,23,25 31:6 44:15 50:19 55:11 61:2,25 66:6 67:16,17 68:8,10 75:19 76:16 77:1,5 114:23,25 115:2 124:15	<b>contacted</b> 20:12 101:22 153:13,20	<b>conveyed</b> 87:11	<b>couple</b> 49:23 53:4 77:20 137:5
<b>conjunction</b> 92:24		<b>conveying</b> 66:13	
<b>consecutively</b>		<b>copy</b> 157:3,4	
		<b>core</b> 28:24 58:2,6, 10,17 59:2 128:16 143:19 144:12	
		<b>cores</b> 27:10 28:7, 19 29:4 128:1,5,8, 10,15,18 143:20	
		<b>correct</b> 6:8 15:11 17:21 28:18	

150:20	<b>critiques</b> 143:17	<b>Dave's</b> 23:8 73:1, 3,6 148:17	50:12
<b>courses</b> 18:16,19 48:11	<b>crop</b> 152:1	<b>Davidson</b> 118:11	<b>deliver</b> 23:18
<b>coursework</b> 32:9 46:5	<b>cross</b> 54:17 116:24 119:2 130:11	<b>day</b> 23:19 47:16 55:9 137:2 152:18	<b>delivered</b> 22:6 24:8 31:6,9 55:4 68:22,25 69:1 73:24,25 74:3 77:19 105:5 106:7 108:5 109:23 139:20 147:1
<b>court</b> 6:21 7:17 12:13,23 20:5,19 30:9 31:3,5,8,18 36:20 46:13,19 49:1 51:5 52:10, 12,13,14 66:3,8, 16 67:2,13 68:5, 13,21,25 74:14 86:21 87:4,11,12, 21 88:11,12 89:23 90:4,7,9 109:7 116:11,19 127:15 130:21 131:15 145:7 152:3	<b>Crowell</b> 130:11	<b>days</b> 47:17	<b>democracy</b> 56:4
<b>Court's</b> 22:25 49:3,22 69:1 87:5 90:3,5	<b>Cure</b> 50:24	<b>deal</b> 38:11,19 41:6 44:8 78:22 81:8 96:14 99:16,18	<b>democrat</b> 60:8
<b>courts</b> 12:9,14,17 50:24 72:16 76:23 86:20 117:8 122:14 123:3 126:4 135:20 136:3	<b>Curiae</b> 62:10	<b>dealing</b> 46:5	<b>Democratic</b>
<b>cover</b> 18:6	<b>current</b> 12:16 13:12 15:17 31:14 116:10	<b>deals</b> 39:14 82:24	110:16 134:19,21 135:14 136:13,14 154:9,13
<b>covered</b> 14:11 18:5	<b>curriculum</b> 32:17,18,19 33:13 81:25	<b>dealt</b> 44:10 99:1, 12	<b>demographers</b> 22:3 25:9
<b>COVID</b> 55:7 93:5 95:13	<b>cut</b> 7:3,4	<b>deaths</b> 55:9	<b>demographic</b> 69:21 125:9
<b>COVID-19</b> 54:22	<b>cuts</b> 51:6,11 146:15	<b>debate</b> 82:7,8	<b>demonstrative</b> 102:5
<b>create</b> 70:19 74:8 102:4 113:1 115:12,19 129:21	<b>CV</b> 6:6 11:22,23 13:1,12,14 19:7, 14 33:21 34:11 35:14 36:6 37:19, 21 38:6,10,19,23 39:25 46:18,20 48:18 72:19 93:12 101:2,4,8,12	<b>decade</b> 22:17 72:18	<b>denied</b> 121:21
<b>created</b> 16:24 73:21 113:18,22, 24,25 144:7	<b>cycle</b> 12:15,16 20:7 58:20 71:14 93:24 114:23	<b>decade's</b> 70:10 136:8	<b>Density</b> 84:10
<b>creating</b> 58:16	<b>D</b>	<b>December</b> 10:6 139:10	<b>department</b> 17:23 18:10,23 33:16
<b>credit</b> 50:13	<b>data</b> 14:9 17:20 20:24,25 22:10,13 23:2,4,7,13,16 24:1,22 25:24 26:15 27:14,20 36:3 51:14 52:4, 20 54:2 55:4 59:24 70:14 73:22 106:3,4,5 109:10 112:17,20 113:12	<b>declination</b> 51:15	<b>departments</b> 18:3
<b>criteria</b> 27:2 52:15 65:16 94:17 116:13 132:8 138:1,19 146:13	<b>define</b> 24:20 29:11 45:19 73:15 82:18 116:20	<b>decrease</b> 119:7 127:1	<b>depend</b> 26:12
<b>criticized</b> 53:3	<b>date</b> 9:25 10:4	<b>decreases</b> 119:6	<b>depending</b> 80:3
	<b>dated</b> 9:17,18 10:10	<b>deemed</b> 97:21	<b>depends</b> 22:12 24:20 35:21 131:15
	<b>dates</b> 139:22 153:17	<b>deep</b> 71:10	<b>Depo</b> 150:19 156:5
		<b>define</b> 24:20 29:11 45:19 73:15 82:18 116:20	<b>DEPONENT</b> 157:6
		<b>defined</b> 57:20 115:10	<b>deposition</b> 6:15 7:15 8:20 9:5 10:9,20,21 11:7, 12 59:17 101:18 107:24 108:7,19 137:6 139:12 146:23 147:4,25 149:7,8,15 150:5, 11 155:7,11 156:11,12,13

<b>describe</b> 11:24 12:11 13:25 15:8 17:3 19:4,5,20 21:23 22:20 29:25 32:6,21 33:9 34:7 38:18 42:13 45:14 47:13,24 48:21 49:25 50:16 52:23 53:1 54:23 55:16 56:22 58:5 59:20 61:4,19 62:19 63:21 64:11 65:24 66:1 73:8 77:25 79:7,19 82:21 86:12,23 90:25 92:22 93:20 94:7, 21 95:10,25 96:21 98:7 100:8 108:25	<b>dictate</b> 123:6 <b>differ</b> 26:23 <b>difference</b> 58:3,5 77:2,10,16 <b>differences</b> 24:10 77:7 <b>differently</b> 40:17 42:11 153:19 <b>dig</b> 86:10 <b>direct</b> 146:22 <b>direction</b> 87:7 <b>directly</b> 19:9 46:11 55:12,13 <b>discipline</b> 15:15 45:24 96:17 <b>disciplines</b> 43:21 <b>discontiguous</b> 65:18 <b>discovered</b> 131:10 <b>discretion</b> 28:11 <b>discuss</b> 14:18 15:19 16:6 39:19 40:23 44:21 45:11 49:8 54:4,7 56:7, 15 60:16 64:5 65:5 91:5,8,10 92:1 93:14 94:4 95:18 <b>discussed</b> 31:11 33:6 54:13 56:13 59:16 65:9,15 70:6 78:6,18 86:9 <b>development</b> 88:14 93:18 100:5 137:2 152:18 <b>deviation</b> 26:17 42:7,8 45:6,7	<b>discussion</b> 12:21 14:23 56:18 65:13 92:15 99:23 106:20 <b>disposal</b> 77:8 <b>disputed</b> 58:8 117:7 122:12,13 <b>disqualifying</b> 69:11 <b>dissertation</b> 33:20,23,25 34:3, 7,8,15,22 35:1,23 40:2,7,9,10,13,21, 22 41:4,11 136:1 <b>distinction</b> 58:1 121:9 <b>distinctions</b> 121:12 <b>Distinguishing</b> 84:9 <b>distort</b> 80:2 <b>distorted</b> 58:10 <b>distributing</b> 135:21 <b>distribution</b> 42:22 96:13 <b>district</b> 44:15 58:18 64:13 76:18 78:3 79:13 80:2 85:14 113:20 116:7 120:7 121:14,15,24 124:16 125:6,18 126:12 127:7 132:5,18,21,23 134:5 135:23 143:5 145:11 <b>districting</b> 30:25 50:19 51:1 53:8 57:8 81:12 100:24 <b>districts</b> 21:1,18 22:23 53:5 55:11 61:3,25 64:17 65:17 66:11 78:4 79:17 80:16 102:7,14 105:13 106:17,21,25 107:9,17 113:6, 16,23 114:13,23,	25 115:2,3 116:19 118:4,6 120:6,17 121:5,6,10,11,17 122:1 123:7 124:9,12,24,25 125:3 126:5,19 127:2,9,13,17 128:4 132:23 133:22,24 134:4 135:10,11,24 143:8,12,21 144:2,6 145:1,14 148:22 <b>divided</b> 45:23 <b>docket</b> 68:21 71:16 <b>document</b> 10:16 11:1,5,8,14,19 81:24 101:19 107:25 108:22 110:3,17 113:3 132:19 139:6,14 145:21 146:24 147:6,17 149:10, 11,17 150:7,14 156:12,18 <b>documents</b> 9:10 29:13 104:24 110:12 134:12 140:14 141:19 145:7 <b>Donald</b> 64:2 <b>door</b> 55:6 <b>double</b> 27:23 98:20 99:15 <b>double-blind</b> 98:20 <b>doubt</b> 56:15 <b>Doug</b> 5:20 9:18 142:7 155:10 <b>Douglas</b> 9:24 10:8 155:22 <b>dozen</b> 24:17,18 69:13 98:14,18,24 <b>dozens</b> 20:16 38:8 69:13 <b>DRA</b> 74:3 <b>draft</b> 21:6,13 28:1
--	--	---	--

35:25 36:3 69:25  
70:6,8 72:17 73:2  
88:17 89:7 104:6,  
8,9 105:3 108:14,  
16 109:1 110:9,10  
140:1,3 141:20  
142:16,20

**drafted** 21:16  
22:6 63:3 69:4  
109:24 137:20  
142:16

**drafter** 63:2

**drafters** 72:21

**drafting** 21:8 50:5  
71:5,20 72:6,10,  
11,13 76:25  
105:16 115:11,18  
117:22 118:8  
129:19 142:14

**drafts** 109:2,3

**draw** 21:21 61:2  
66:10 67:20 68:6  
86:17 113:4,7  
114:7 120:4 123:9  
124:8,11 138:18  
143:2 144:5  
145:12 150:4

**drawing** 64:17  
66:5,11 68:11  
77:9 88:9 90:8  
114:3 115:2,5  
119:25 120:25  
124:25 126:12  
128:2 129:19  
138:13 151:10  
152:24

**drawn** 114:19  
151:7

**drew** 68:8 113:11  
124:24 125:1  
127:25 149:20,23  
154:15

**Dropoff** 84:14

**due** 55:5

**duly** 5:5

**dynamics** 69:22

\_\_\_\_\_  
**E**  
**earlier** 29:18 33:6  
48:24 59:25 73:19  
78:2,18 86:10  
92:6 100:6 120:4  
131:18 134:11  
140:12 144:20  
145:3 149:12,13

**early** 16:23 22:13  
42:18 43:23 60:3

**earth** 80:1

**easier** 7:18

**easy** 7:2,8 106:16  
137:13,15 138:17  
140:19

**economic** 35:15  
42:18 45:3,5

**economics** 41:14  
43:13,24 44:2,3

**edge** 118:5

**editors** 96:22

**edits** 104:9

**education** 31:24  
32:2,14 46:22  
47:5,7

**educational**  
11:24

**effect** 33:6 54:22  
72:21 94:24 107:7  
149:4

**effective** 127:12

**effects** 51:1 85:13  
95:3

**efficiency** 16:4  
51:15

**efficiently** 6:19

**effort** 131:23  
132:7 137:16,24  
138:4,12

**elaborate** 79:6  
82:10 111:3

**elect** 121:21

**Electing** 34:24

**election** 14:20  
15:4 50:4,9,10,12,  
13 53:9 60:1 64:9  
65:2 81:7 90:21  
95:8 96:19 151:6

**elections** 34:14  
37:17 39:1,2  
92:21

**electoral** 12:22  
25:16 33:22  
34:14,20 35:9

37:15 38:13  
41:20,21 42:4  
44:14 59:25  
60:14,15 62:11  
83:3,9,14 97:4  
99:4,10

**electors** 35:3,6,7

**elevated** 38:9

**eliminated**  
113:15 125:3  
146:14

**email** 68:21

**embarrassed**  
142:19

**employment**  
13:18 31:14

**enacted** 113:7  
118:20,23 121:6,7  
126:19,24 127:20  
128:5,6 131:21  
134:8,17,18,24  
135:15 136:8,16  
143:7 144:9,10,  
12,13,14,21  
145:15 146:1,4,6,  
10,11 147:20

**end** 5:14 14:19  
15:5 37:22 152:11

**ending** 12:18

**ends** 58:11

**endurance** 8:6

**engaged** 102:19  
111:10 129:5  
153:12

**engagement**  
111:14 129:10  
149:12 153:16,20,

22  
**engaging** 102:23

**engineer** 56:6

**engineering** 18:4

**ensure** 27:21  
28:14 57:13 70:25  
73:10 74:25 109:6  
110:1 124:12  
135:20 151:23

**ensured** 120:8  
121:2,3

**ensuring** 21:2  
26:8,10 27:15  
102:6 104:16  
115:8 124:3 125:2

**enter** 64:14,15  
65:17

**entire** 89:3,8,10  
119:7

**entities** 114:21

**entitled** 64:10

**enunciates** 67:13

**equal** 30:5 42:22  
49:22 116:20  
150:1

**equality** 42:8,14,  
15 43:8,14,15,16,  
18,20 51:8

**equally** 34:20  
52:18 73:14  
135:11

**Equitable** 62:18

**Eric** 15:12

**error** 148:4

**errors** 110:3  
148:7 149:2,4  
151:14,19,20  
152:1

**essentially** 27:23  
40:15 53:3 55:3  
60:2

**established**  
135:20

**estimate** 23:17  
115:5,6 129:1

<b>ethics</b> 5:20	<b>expert</b> 5:22 6:7, 11,12,13 9:19,22, 24 10:3,4 11:9 36:17,19 50:4,9, 10,11 73:19 90:12,15 97:21 100:9,12,19,23 101:17,23 102:11, 20 103:2 104:1,7, 21 105:16 106:10, 19 107:2,4,7,14, 19 108:3,11 109:3,5,13,14 110:6,13,24 111:10,14 112:18, 20,23 113:17 115:11,19 123:14 128:23 129:20 132:9 133:18 137:7,10 139:8, 18,21 140:12,16 141:2 142:7,10 146:25 151:19 153:14 154:10 155:13,16,19,21 <b>expertise</b> 72:14, 15 97:6 100:20,21 101:3,8,11 106:15 <b>experts</b> 9:7 47:17 <b>explain</b> 6:20 7:25 17:13 39:9 120:21 136:1 <b>explanations</b> 7:16 <b>express</b> 8:1 <b>extent</b> 122:10 128:19	<b>factually</b> 37:3 <b>faculty</b> 34:3 <b>fail</b> 20:4 <b>failed</b> 124:13 126:22 143:18 <b>Fair</b> 57:7 <b>fairly</b> 22:16,18 33:11 47:15 102:14 <b>faith</b> 131:23 132:7,11 133:10, 16 137:10,11,16, 23 138:6,7,12 148:5 151:21 <b>fall</b> 15:6 <b>Fallacies</b> 81:6 <b>falls</b> 17:22 40:22 <b>Fame</b> 64:3 <b>familiar</b> 10:16 11:5 25:15,18 27:1 107:25 134:7 146:24 150:7 <b>fantastic</b> 10:12 59:19 101:14 152:20 <b>far-along</b> 37:11 <b>faster</b> 136:18 <b>Favor</b> 83:4 <b>fed</b> 149:24 <b>federal</b> 21:3 25:12,13 26:1,2 27:21 29:19 44:22 46:13 48:16 49:8 51:17 54:8,11,20 56:13,16 60:21 61:14 62:3,7,15 63:10,13,18 65:5 70:20 72:16 75:5, 9,15 76:9,11 78:24 79:2 80:9, 14 82:24 83:6 84:25 85:11 86:20 91:5 92:12 93:15 94:4,10 95:5,19 96:10 102:6 115:13,20 116:5, 13 120:16 121:1	129:23 130:2,13 132:8 144:18,23 <b>feedback</b> 22:7,8 68:18 71:15 141:10 <b>feel</b> 7:10 <b>fellow</b> 6:3 13:21 14:2 18:21 71:12 <b>felt</b> 142:19 <b>Feng</b> 94:2 <b>fewer</b> 131:6 132:1 134:24 135:7 <b>field</b> 36:17,25 37:14 45:15 46:4 <b>fields</b> 36:14 45:11 <b>Fierman</b> 71:24 <b>figure</b> 67:9 153:8 <b>figured</b> 109:12 <b>file</b> 39:23 <b>filed</b> 9:7 10:1 139:2 <b>files</b> 39:21,23 153:15 <b>filings</b> 71:17 <b>filling</b> 32:11 <b>final</b> 13:6 31:9,16 35:12 37:5 75:14 90:3 106:12 109:25 110:9 147:13 <b>finalized</b> 152:3 <b>finalizing</b> 113:13 <b>finally</b> 52:12 71:18 <b>find</b> 49:12 69:6 70:19 96:5 110:16 114:12 131:19,24, 25 145:21 148:14 <b>findings</b> 49:3 <b>fine</b> 6:1 10:2 24:12 122:19 136:6 157:5 <b>finish</b> 7:5 16:10
<b>exhibits</b> 155:4			
<b>exist</b> 107:20			
131:10			
<b>existed</b> 45:21			
58:19 94:25 125:4			
<b>existing</b> 21:1			
<b>exists</b> 58:19			
62:19			
<b>experience</b> 46:18			
65:21 85:18 86:4			
87:9 90:11 106:15			
122:17			
<b>Experiment</b>			
83:13			
	<b>F</b>		
	<b>f-r-a-c-k</b> 65:4		
	<b>face</b> 121:7		
	<b>facet</b> 19:12		
	<b>fact</b> 55:5 73:24		
	109:18 117:7		
	133:4 146:11		
	152:7		
	<b>factor</b> 128:2		
	<b>facts</b> 140:24		
	141:1,2,7		

<b>finished</b> 50:2	140:14 143:17 145:14	<b>geography</b> 53:6 96:19	<b>greater</b> 125:16 127:20 132:24
<b>fits</b> 79:15		<b>geometric</b> 79:11	<b>greatest</b> 22:14,15
<b>five-minute</b> 152:9	<b>fracking</b> 64:10, 13,24 65:7 80:23	<b>gerrymander</b> 52:1,3,5 93:8	<b>grew</b> 71:13
<b>fiver</b> 32:24	<b>fracks</b> 65:4	<b>gerrymandered</b> 85:15	<b>Griggy</b> 71:18,23 72:5,10 87:2 105:19 114:4 152:22
<b>fixing</b> 149:4	<b>fragments</b> 38:8	<b>gerrymandering</b> 12:9,15,24 14:22 16:2,3 49:6,7,19 50:18,24 51:13, 17,20 52:19,21 61:3,16 80:12 84:18,23 85:8,12 93:16 94:21 95:6	<b>grip</b> 80:18
<b>flat</b> 80:1	<b>framework</b> 56:5 128:9	<b>Gingles</b> 36:20 73:20 125:24	<b>Grofman</b> 33:20 34:5 35:18 36:15 39:17 46:12,22 47:1,2 50:5 53:4, 25 70:24 72:17 73:18 81:15 86:16,20 87:7 114:22,25 123:17 140:8,21 141:4,12 142:16
<b>flawed</b> 24:23 25:5 67:19	<b>Fraud</b> 81:8	<b>Gini</b> 42:8,15,17 43:1,7,22 45:5	<b>Grofman's</b> 73:9 140:16
<b>flaws</b> 53:15	<b>free</b> 19:9 30:5 49:22	<b>give</b> 8:22 22:7,8 25:2 63:20 67:3 68:20 82:11 87:15,17 91:1 99:3 103:21 106:13 122:10	<b>ground</b> 6:18
<b>flip</b> 11:4,18 131:1 147:9,24	<b>frequently</b> 33:2	<b>goals</b> 118:1	<b>grounds</b> 145:9
<b>flow</b> 109:6 110:3	<b>front</b> 72:20 129:2 150:6	<b>good</b> 16:13 52:15 131:23 132:7,11 133:10,16 135:3 137:9,11,16,23 138:7,12 148:5	<b>group</b> 116:8 120:18 122:25
<b>focus</b> 27:5 49:16 51:16 54:12 94:13 95:4	<b>full</b> 15:22 131:5	<b>governor</b> 52:9,11	<b>groups</b> 120:2 122:5,25
<b>focused</b> 29:23 95:16	<b>fully</b> 9:3 11:23	<b>grad</b> 46:23 97:16	<b>guess</b> 79:19 149:11
<b>fold</b> 60:7	<b>function</b> 114:11	<b>graduate</b> 14:5 18:25 46:11,22 48:1 97:8,11	<b>guessed</b> 70:24
<b>folks</b> 152:10	<b>functioning</b> 9:3	<b>graduated</b> 71:5	<b>guidance</b> 33:5 87:5 123:4
<b>follow</b> 44:17	<b>fundamental</b> 34:17	<b>Grant</b> 96:13	<b>guide</b> 29:9,18
<b>follow-up</b> 50:22, 25 152:21		<b>granted</b> 67:5	<b>guideline</b> 118:10 129:21
<b>Forbes</b> 6:4	<b>G</b>	<b>granting</b> 17:25	<b>guidelines</b> 27:13, 25 111:20 112:12 116:10 118:16 131:22 146:18 147:11,14,16
<b>forgetting</b> 16:17 51:23 117:18	<b>gain</b> 22:14	<b>grasp</b> 43:5	<b>guidepost</b> 76:11
<b>forgive</b> 51:24 55:1	<b>gap</b> 16:4 51:15	<b>great</b> 8:17 9:16 33:8 62:18 100:8	
<b>form</b> 109:25 115:24 128:12 129:7 130:7 141:5	<b>gave</b> 94:11 95:15 114:6		<b>H</b>
<b>formatting</b> 104:15 110:2 140:18	<b>geez</b> 94:1		
<b>formed</b> 58:22	<b>general</b> 5:15,21 79:10 82:14,16 88:19 127:21 128:9		
<b>forming</b> 112:20	<b>general's</b> 5:12,19 68:17		
<b>forthcoming</b> 12:5 13:5	<b>generally</b> 37:13, 16 48:10 79:3,11 82:4 88:14 91:3 97:20 100:18,25		
<b>Forum</b> 93:20	<b>generated</b> 69:19 151:24		
<b>found</b> 52:16,19 59:23 94:10,18 105:4 109:4 131:9,16,20	<b>generous</b> 24:19		
	<b>geographic</b> 52:24 58:25 69:21		

<b>half</b> 99:4,5 125:17 154:22 156:5,14	143:17 146:25 148:10 155:10,22	<hr/> <b>I</b>	36:20
<b>Hall</b> 6:4 64:3	<b>Himes'</b> 10:9 136:7 144:1	<b>idea</b> 43:12 53:17 57:17 61:22 63:24 64:13,24 65:16 66:18 82:23 84:20 85:2 96:7 103:23 121:18 140:18	<b>improve</b> 146:12
<b>Hamilton</b> 118:11	<b>hired</b> 20:14 69:17 71:18 72:15 73:17 86:22 123:14,17 145:6	<b>ideal</b> 132:25	<b>improved</b> 145:25
<b>Hampshire</b> 12:5 38:2 78:17	<b>history</b> 16:14	<b>ideas</b> 21:18 22:5 37:12 38:8 39:1,4, 19,24 68:18 70:17,19 77:15 89:19	<b>incidental</b> 54:14, 15 65:1,7,8 92:13
<b>happen</b> 7:4,22,23 64:16,18 93:23 151:14	<b>hiring</b> 20:11	<b>identical</b> 118:19, 23 128:4 143:6 145:23	<b>include</b> 11:25 12:21 39:5 46:2 56:18 57:15 113:6
<b>happened</b> 20:7 55:9 153:16	<b>hofstra</b> 90:21 91:13	<b>identification</b> 10:19	<b>included</b> 20:15 61:23 65:21 68:13 104:16 112:24
<b>happening</b> 46:24	<b>holding</b> 29:25 30:4 138:19,21	<b>identifies</b> 125:15	<b>includes</b> 14:2 16:3 39:24 142:24 144:24
<b>harbor</b> 117:19	<b>home</b> 5:25 48:4	<b>identify</b> 9:9 85:19	<b>including</b> 9:7 20:22 23:23 52:16,17,18 67:15 96:23 105:3 118:6 132:1
<b>hard</b> 48:3 49:12 73:15 116:23 146:12	<b>honest</b> 38:21	<b>identifying</b> 50:18 51:19 93:7	<b>income</b> 43:2
<b>harder</b> 61:4	<b>honestly</b> 45:10 65:14 99:3	<b>Ignoring</b> 147:13	<b>increase</b> 149:5
<b>Harris</b> 5:17	<b>hour</b> 8:12 103:5 142:18	<b>III</b> 106:4 112:17,20 142:10	<b>increasing</b> 119:7
<b>Harvard</b> 16:13	<b>hours</b> 8:22 47:16 103:6,8,16,18,25 108:9 129:1	<b>illustrative</b> 112:24 115:12,19 116:4 117:22 118:8 119:21 120:1,22 122:4 126:15,25 127:5, 19,25 138:12 145:17	<b>incredibly</b> 151:10,11
<b>head</b> 7:14	<b>House</b> 9:22 10:5 20:2 21:9,17 30:13,19 42:6 54:22 108:4 110:15 111:25 112:5 134:9,21 135:12,14 136:16 137:7 139:9 142:10 143:2,4,6, 13 144:17 154:8, 12,13 155:16,19	<b>image</b> 74:19	<b>incumbent</b> 28:19 119:22,23 142:3, 6,13
<b>heard</b> 68:15	<b>housekeeping</b> 154:21 156:21	<b>immense</b> 71:17	<b>incumbents</b> 28:9,21 143:19 144:14
<b>hearing</b> 68:13	<b>Houston</b> 95:10,14	<b>immigrants</b> 61:23	<b>independent</b> 19:3,5,12 32:14
<b>hearings</b> 20:16 69:14 71:10	<b>https://www.</b> <b>capitol.tn.gov/</b> <b>house/</b>	<b>impact</b> 148:23	<b>index</b> 42:8,13,15, 17 43:1,8,20,22
<b>heavier</b> 99:7	<b>committees</b> 112:7	<b>impacted</b> 140:16	<b>indicating</b> 150:9
<b>held</b> 31:4 69:14 118:19 126:18	<b>huge</b> 103:21	<b>impaired</b> 9:1	<b>indicator</b> 80:11
<b>helped</b> 21:3 28:13 73:10 140:10 142:22 153:8	<b>hundred</b> 24:2,8 36:21 148:15	<b>implement</b> 87:4	<b>individual</b> 53:8 71:12 148:21,25
<b>helpful</b> 73:14		<b>implicated</b> 80:10	<b>individuals</b> 55:6 71:3 72:1
<b>helping</b> 57:12 86:16		<b>important</b> 7:1 26:10 34:13,17,21	<b>inequality</b> 42:1,2, 10 43:2,3
<b>helps</b> 7:10			<b>inequitably</b> 135:21
<b>high</b> 146:9			
<b>higher</b> 135:14,16 144:11			
<b>highlighted</b> 74:1			
<b>highly</b> 21:19 56:15			
<b>Himes</b> 5:20 9:7, 18,24 139:20,21 141:23 142:7			

<b>Inevitable</b> 34:23	<b>Inter-university</b> 47:22	<b>involving</b> 12:24 14:14	<b>Juan</b> 86:12 89:9
<b>inference</b> 47:14, 18	<b>interest</b> 17:17 18:15 57:7,18,23 58:2,13,21,23	<b>Irvine</b> 32:5 33:10 37:2,4 46:9 71:20 114:19	<b>judge</b> 66:16,20 67:3,4 69:5
<b>inferences</b> 17:16	59:3 71:16 74:17, 21,25 75:3,8 126:8	<b>isolation</b> 83:20 123:1,21	<b>judge's</b> 91:17
<b>Influence</b> 83:20	<b>interested</b> 74:22 96:4	<b>issue</b> 13:5 17:1 87:18 123:3 148:10 152:6 156:1	<b>judges</b> 140:20 142:23
<b>influential</b> 48:25 49:24	<b>interesting</b> 43:17 80:8 96:7	<b>issues</b> 56:1 75:4, 9 106:24 146:19 150:19,23	<b>Justice</b> 67:6
<b>inform</b> 20:23 29:13 57:12 77:9	<b>interests</b> 58:14	<b>item</b> 19:17 40:4, 19,25 41:9 47:4 48:20 50:15,22 52:23,24 55:16 56:17 57:6 61:7,8 90:11 147:25	<hr/> <b>K</b> <hr/>
<b>informal</b> 27:25 63:5	<b>international</b> 46:1	<b>iterations</b> 16:11	<b>Kathay</b> 94:2
<b>information</b> 29:16 104:24 106:3 112:19 141:20 142:3	<b>internet</b> 106:6	<hr/> <b>J</b> <hr/>	<b>Keyssar</b> 16:13
<b>informing</b> 77:24	<b>interpretation</b> 49:22	<b>Jacob</b> 5:16	<b>kind</b> 16:8 49:14 68:19 80:8 82:3 86:25 87:1 109:11 121:13
<b>initial</b> 120:3 148:1 150:9 154:10	<b>interpreted</b> 30:8 49:18 130:21 144:24	<b>Jason</b> 71:13,23, 24	<b>knocked</b> 155:5
<b>initially</b> 66:5 113:4	<b>interpreting</b> 49:5	<b>Jason's</b> 71:23	<b>knowledge</b> 12:20 37:1 38:5 41:10 43:7,11 71:10 80:20,22 91:20 122:17
<b>Innovation</b> 62:11	<b>interviewed</b> 20:13	<b>Jesus</b> 103:19	<b>Knox</b> 118:11
<b>input</b> 110:5 114:9 140:4,9 141:12,18	<b>intimate</b> 71:10	<b>job</b> 7:1,17 19:10 20:21 21:6 25:16 27:15 29:10,14 30:22 31:11 66:9	<hr/> <b>L</b> <hr/>
<b>inside</b> 113:23	<b>intricacies</b> 26:6	<b>join</b> 54:1	<b>Lab</b> 62:11
<b>instance</b> 60:14 65:10	<b>introduce</b> 5:12,23 10:20 11:12 14:13 139:12 147:4	<b>Jonathan</b> 5:3 6:2 9:17,21,23 10:6, 20 155:25 156:13	<b>labeled</b> 156:9
<b>instances</b> 144:1 150:18	<b>introduced</b> 51:3 65:1 149:15	<b>jonathancervas.</b> com 13:15	<b>lack</b> 79:19
<b>Institute</b> 14:3 17:24	<b>introduction</b> 40:14 109:9	<b>jotting</b> 155:5	<b>lady</b> 71:3
<b>institution</b> 45:20	<b>invaluable</b> 71:15	<b>journal</b> 40:18 96:18,19,23,24 98:9	<b>laid</b> 68:12
<b>institutional</b> 56:5	<b>invented</b> 43:23	<b>journals</b> 34:10 81:21 82:5 96:22 97:20,23	<b>landscape</b> 25:16, 19
<b>institutions</b> 14:15 42:11	<b>inverse</b> 42:21		<b>language</b> 26:24 137:10,22 140:10 148:9
<b>instructions</b> 114:6,8	<b>Inversions</b> 34:23		<b>large</b> 69:8 124:16
<b>insulate</b> 117:14	<b>invited</b> 13:11 90:17 92:25 93:21 95:12		<b>largest</b> 135:23
<b>intend</b> 40:11	<b>involve</b> 96:9		<b>Las</b> 47:5
<b>intended</b> 7:4 15:14 17:9 18:8	<b>involved</b> 22:19 46:13 65:13 67:21 86:23 89:18		<b>lasted</b> 20:15 74:9 129:15
<b>intense</b> 47:15			<b>late</b> 31:6 55:4
<b>intent</b> 137:21			<b>law</b> 12:1,5 14:20 16:14 21:3 25:6,9,

12,14 26:1,11  
27:21 29:15,19  
38:2 50:4,9,10,12,  
13,14 54:20 63:19  
64:9 65:2 66:7  
70:20 71:4,5,6  
75:15 76:9,11  
78:17 80:14 90:9,  
21 91:4,13,15  
92:16 94:12 95:22  
96:19 102:6  
106:24 107:12,19,  
21 116:14,18  
117:16,17 119:12,  
19 120:16,19  
121:1 122:8  
130:19 132:8  
135:2 141:3  
144:24

**laws** 91:12

**lawsuits** 29:20

**lawyer** 106:23

**lawyers** 22:3  
25:10 68:16,24

**layout** 109:20

**lead** 35:24 54:18

**leader** 19:24,25  
20:1

**leaders** 22:1,2

**leading** 47:17  
64:19

**League** 29:23  
49:2

**learn** 25:17 48:3

**learned** 43:25  
44:3 47:19 48:6,8

**leave** 76:6,9

**lecture** 44:2

**led** 69:11 113:16

**Legacy** 84:9

**legal** 21:4 31:19  
35:14 41:13 45:3,  
5 48:17 53:18,19  
69:18 114:20  
115:8 117:18  
121:18 122:11,12,  
13 123:2 126:24

141:1  
**legally** 22:24  
134:14  
**legislative** 84:3  
94:20 95:24 111:7  
118:2 137:19  
**legislature** 25:4  
30:4,20 31:2 51:4  
52:8,10 66:6  
69:16 71:9 106:16  
107:16 111:2  
112:2 118:4  
126:20 127:7  
128:19 132:6,10  
133:1,2 134:8,16  
136:9 137:19  
138:1,11,15 143:6

**legislature's**  
25:1 70:9

**legislatures**  
93:22 96:6

**Legislatures'**  
16:22

**letter** 153:17

**level** 17:9 44:13  
124:16

**levels** 60:10  
138:20

**library** 77:13,16

**license** 23:6

**life** 7:8 50:14  
**limitation** 103:25  
104:2

**limitations** 104:3

**limiting** 132:22  
134:4

**lines** 12:8 37:14  
53:18 79:16 114:9  
130:12 143:23

153:7

**linguistically**  
121:13

**link** 74:3

**list** 37:20 38:10,16  
39:25 85:21 90:20  
98:15 112:24

141:6 147:10,12  
**listed** 13:3 31:14  
32:6 34:10 35:14  
36:2 37:25 38:6,  
22,25 45:12 46:20  
48:18,23 85:24  
88:21 93:12 97:9  
112:20 116:4  
138:1 139:7 142:9

**lists** 136:7

**literally** 94:15

**literature** 42:18  
59:23

**literatures** 43:21

**litigation** 12:18  
67:21 68:4 69:9  
86:18 89:17

**live** 42:12 68:15  
123:10

**lived** 25:20,21

**living** 148:25

**Lobster** 62:18

**Location** 83:19

**Lockert** 130:11

**long** 45:22 63:24  
74:7 96:2 97:7  
128:22 136:5  
145:15

**longer** 8:13 56:25  
66:9 116:9 120:7,  
9

**longstanding**  
58:21

**looked** 26:6 40:10  
51:2,5,6,12,14,22  
58:12 111:16  
146:21

**loss** 20:25 22:14

**lot** 22:13 29:15,23  
43:21 55:1 70:11  
72:24,25 136:4

**lots** 136:3

**love** 14:1

**low** 113:14 117:24  
120:13 143:10

**lower** 118:1  
136:15 144:9,10  
145:25

**lunch** 8:13

**luncheon** 99:24

## M

**made** 19:24 23:9  
66:14,24 74:17,20  
75:12,13,14 82:13

104:9 110:2,3  
116:8 121:4 138:4  
140:20 141:2  
143:8

**main** 57:13

**Maine** 62:13,19  
63:7

**maintain** 27:10

**maintaining**  
143:11

**major** 18:2 60:6  
118:10

**majorities** 123:9

**majority** 19:24  
20:1 22:1,2  
121:10,15,24  
125:11 145:13

**majority-**  
**minority** 113:15  
120:5 121:14  
125:6,11,18,23

**make** 6:18 7:1,8,  
17 8:20 9:12  
17:16 27:25 30:11

39:13 43:4 65:21  
67:18,23 74:4,23  
77:11 99:20  
104:14 108:8

109:7 111:24  
115:16 118:17

133:17 137:23  
141:4 142:23  
146:16,17 152:11  
153:6,10 156:7

**makes** 21:23 90:6  
146:18

**making** 74:23  
104:21 107:13,18

118:15 119:20	115:4 116:12,16	119:12	138:15
126:20	118:2 120:1,12,13	<b>matters</b> 64:18	<b>memory</b> 26:5
<b>malapportionme</b>	122:22 126:15,25	96:14	<b>Memphis</b> 5:17
<b>nt</b> 22:18,21,22	127:1,3,5,19	<b>maximum</b> 131:21	<b>mental</b> 74:19
35:16 41:15,25	128:2 129:19	<b>Mcallister</b> 67:6	<b>mention</b> 54:16
42:1 44:11 45:4	134:7,10 137:20	<b>Mcgee</b> 15:12	<b>mentioned</b> 29:18
82:21	138:13,18 142:24	<b>meaning</b> 35:25	37:25 49:13 59:24
<b>malicious</b> 137:20	144:18,23 145:14	48:24 57:10	61:21 63:16,17
<b>map</b> 20:17,20	146:3 148:1	132:25	72:3 73:19 140:12
21:16 30:13,14,	149:20,22,23,25	<b>meaningful</b>	142:9
19,23 67:11,16,	150:18 151:7	148:23	<b>mentor</b> 18:24
17,20 68:8,9,11,	152:2,22,24	<b>meaningfully</b>	<b>met</b> 115:8 125:25
22,23,25 69:1,4,	<b>Maptitude</b> 23:6	63:25	<b>method</b> 53:14
15 70:9,10,17,19	65:3 73:4,5 88:3	<b>means</b> 16:19 50:4	<b>methodologicall</b>
72:6 73:22,23,25	<b>March</b> 9:18,19	117:6 118:23	y 82:6
74:8,13,23 75:4,8,	149:12 153:11	132:23 138:7	<b>methodology</b>
16,18,19,21,23,24	<b>Marissa</b> 71:24	<b>measure</b> 42:17	14:9 17:4,10,16,
76:13,16,25 77:1,	<b>mark</b> 10:19 20:10	43:3,14,15,16,18	20 18:7 33:16
5,6,12 87:22 88:9,	<b>marked</b> 11:1,14	60:19,20 76:2	46:2 48:3
25 89:2,3,8,22,23	101:17,20 107:24	79:4,5,16 80:19	<b>methods</b> 33:19
90:2,5,8 94:20,24,	108:22 139:14	83:9,10 136:3	47:18
25 95:1 105:5,6,8,	146:23 147:6	<b>measured</b> 42:19	<b>metric</b> 64:11 65:2
12 110:14,16,25	149:7,8,17 150:14	79:11	80:24
111:3 113:20	156:8,18	<b>measurement</b>	<b>metropolitan</b>
116:7,9 120:4,9	<b>Massive</b> 81:7	42:19 78:21 80:3	119:10
124:5 127:14,20	<b>master</b> 36:23	92:7	<b>Michael</b> 34:5
128:6,10,17,19	46:14,15,17 47:1,	<b>measures</b> 16:1	<b>Michigan</b> 48:1
130:16,17 134:9,	2 65:20 66:1,4,19	22:19 41:21,23,	<b>mid-november</b>
19,22 135:5,14,15	67:2,18 69:7,10	24,25 51:2,12	139:25
136:13,15,16	70:22 72:1 73:12	52:19 59:22,24	<b>midterm</b> 15:3
143:2,4,14,22,24	86:4,7,15,21 87:3,	79:12,14	39:2 84:14
144:3,6,7 145:24	6,16,20 88:8,10,	<b>measuring</b> 35:15	<b>mind</b> 50:9 57:25
146:4 148:6 151:9	16 89:6,7,13 90:6,	41:14 43:8,9 45:4	58:1 76:11 121:9
154:9,13	10 91:2 95:2	79:23 80:7 91:25	<b>minimize</b> 73:13
<b>map's</b> 48:15	114:22 124:2	<b>medication</b> 8:21	114:14 115:21
<b>mapmakers</b> 22:4	129:11 151:8,9	<b>medium.com</b>	<b>minimizing</b>
<b>maps</b> 12:22 16:25	<b>master's</b> 14:13	61:19 62:6,17	115:14
21:6,8,10,11,13,	17:9 18:10,14	63:4	<b>minimum</b> 120:14,
15,21 22:6 23:15,	32:5,8,10,13,16,	<b>meet</b> 25:11	17 130:23 131:16,
18,22 24:2,5,8,14,	17,18	<b>meet all</b> 116:13	19
15,22 25:4,7,11,	<b>match</b> 64:6	<b>Mellon</b> 6:3 13:22	<b>minor</b> 24:15 57:10
12,24 28:1,13,14	143:25	14:1 18:1,22 19:6,	63:4
31:6 66:6,10	<b>material</b> 15:7	10,13	<b>minorities</b> 64:21
67:14,19,24 68:3,	69:18	<b>members</b> 20:3,23	121:20 122:1
6 69:19,24,25	<b>mathematical</b>	28:2,4,12,23	
70:5,6,8,11,18	79:12,24	33:24 72:12	
71:6,21 72:13,17,	<b>mathematicians</b>		
19,22 73:2 77:8,	80:6		
10,14 86:17	<b>matter</b> 25:5 32:11		
87:10,18 88:17	102:11 110:6,23		
89:10,13,15			
105:4,20 106:25			
113:1 114:3,7,20			

<b>minority</b> 19:24 20:1 65:11 116:8 120:2,7,11 121:4, 5,10,16 122:5,24, 25 123:21 125:16 127:2,6,9,13 145:13	<b>names</b> 33:24 <b>narrow</b> 107:5 <b>narrowly</b> 88:23 <b>Nation</b> 86:11 88:2,7 89:9 95:17 152:6	<b>noncompetitive</b> 34:12,19 <b>nonpartisan</b> 94:8 <b>Nordenberg</b> 20:10 <b>North</b> 115:1 <b>nos</b> 7:16 <b>note</b> 6:20 31:11, 17 35:17 49:4 50:1 81:20 90:12 91:16 146:9	129:2 140:19 149:1
<b>minus</b> 76:23 116:21 117:4,8, 10,12,13,23 118:5	<b>National</b> 16:21 93:21	<b>noted</b> 65:20 147:18	<b>O</b>
<b>minute</b> 150:25	<b>Nationalized</b> 84:14	<b>notice</b> 10:20 32:4 57:9 155:11	<b>O'Rourke</b> 93:1
<b>minutes</b> 8:12	<b>nationwide</b> 71:14	<b>noticeable</b> 148:7	<b>oath</b> 33:3 59:14 100:3 136:24 152:15,16
<b>misconception</b> 34:16	<b>natural</b> 55:22,25	<b>noticed</b> 113:14	<b>object</b> 115:24 122:9,12 128:12 129:7 130:7
<b>missing</b> 91:18	<b>naturally</b> 124:12, 24,25	<b>November</b> 12:19 139:24	<b>objection</b> 10:22 11:13 108:20 122:10 139:13 147:5 149:16 150:12
<b>misspelling</b> 91:17	<b>nature</b> 24:25 80:8	<b>number</b> 11:2,15 24:6 26:16 33:16 35:14 40:4,19 41:1,10 44:7 48:20 50:22 51:6 52:23,24 54:21 55:9,10,16 56:17, 22 57:6 59:20 60:5,11,15 61:7,8, 21,25 65:4 74:1,5 77:8 93:13 96:24 99:3 100:13	<b>objective</b> 150:2
<b>misunderstanding</b> 34:18	<b>Navajo</b> 86:11 88:2,7 89:9 95:17 152:6	101:20 103:25 107:16 108:23 113:14 114:14	<b>objectives</b> 150:3
<b>model</b> 109:6	<b>NCSL</b> 93:19,22 94:8 111:17 112:11	119:6 127:12,16 129:21 133:13,15 135:6 137:14 138:18,22 139:15	<b>observed</b> 32:25 59:11 99:24 136:22 152:13
<b>moderated</b> 93:24	<b>NCSL's</b> 29:15 82:12	143:10 144:13 145:13 147:7,25 148:9 149:18 150:15 156:15,19	<b>Ocampo</b> 96:4
<b>moment</b> 50:23 51:24 99:9	<b>necessarily</b> 18:2 121:23 131:13	<b>negotiation</b> 20:16 21:19	<b>occasion</b> 87:8
<b>monthlong</b> 47:25	<b>needed</b> 123:8	107:16 108:23 113:14 114:14	<b>occasionally</b> 18:24
<b>months</b> 20:15	<b>negotiated</b> 28:13	119:6 127:12,16 129:21 133:13,15 135:6 137:14 138:18,22 139:15	<b>October</b> 9:21,23 11:22 108:5 129:13
<b>motivation</b> 124:11	<b>neutral</b> 36:24	143:10 144:13 145:13 147:7,25 148:9 149:18 150:15 156:15,19	<b>offer</b> 47:10
<b>motive</b> 64:20 124:9	<b>Nevada</b> 47:5	<b>numbered</b> 102:7, 14 106:17,22 107:1,9	<b>offered</b> 46:8 48:5 77:14
<b>move</b> 19:16 48:19 59:19 60:23 75:20 90:17 107:23 144:4	<b>newer</b> 79:22	<b>numbering</b> 105:6,8	<b>office</b> 5:12,16,19 6:1,5 68:17
<b>moving</b> 40:25 47:4,12 50:15 54:21 55:16 56:17 61:18 62:17 78:9 86:3 106:2 109:9	<b>Nodding</b> 7:14	<b>numbers</b> 40:9 80:5 85:25 105:13	<b>officially</b> 28:5
<b>multiple</b> 23:19 33:13 45:23 55:18 67:13 76:2 81:22 89:18 126:8	<b>non-citizens</b> 84:6		<b>oftentimes</b> 23:21 48:4 80:17 123:24
<hr/>		<b>non-contiguous</b> 148:2,15	<b>OLS</b> 17:11
<b>N</b>		<b>Non-eligible</b> 84:2 95:24	<b>one-page</b> 73:25 134:11
<b>named</b> 46:14 71:12	<b>non-retired</b> 37:5	<b>one-sentence</b> 106:13	<b>one-sentence</b> 106:13
	<b>non-white</b> 125:13,15	<b>Oops</b> 81:5	
		<b>open</b> 10:7,11 133:25	

<b>opening</b> 135:13	<hr/> <b>P</b> <hr/>	41:4 46:4 50:6 64:14 73:11 81:25 91:18 92:1,11 93:14 112:23 132:20 149:20	9 28:6,8,16,24 29:6,24 30:2,6,8, 25 49:2,5,21 50:20 51:4,5 61:2, 15 123:12,14
<b>operating</b> 118:9	<b>p.m.</b> 157:7	<b>partially</b> 55:4	<b>Pennsylvania's</b> 25:15,19 30:23
<b>opined</b> 102:9	<b>Pablo</b> 5:14	<b>participate</b> 93:2	<b>people</b> 34:4 51:20,25 52:2,3 53:17 57:21
<b>opinion</b> 31:8 67:13 107:3,7,12, 13,19,20 109:14 110:21 112:21 133:18 137:10 144:17	<b>packages</b> 88:1	<b>participation</b> 14:17	68:19,20 69:17 96:5 97:12 99:8 121:13 123:23
<b>opinions</b> 29:20	<b>paid</b> 103:2	<b>parties</b> 22:9 23:18 24:8 25:10,12 60:6,11 68:16,24 77:19 89:16,18	<b>percent</b> 31:7 35:5 76:23 116:21,22 117:1,2,4,5,8,10, 12,13,23 118:6,7 136:6,10,11 146:7,11 148:16
<b>opportunity</b> 89:22,25 120:7 121:5,11,17,21 127:17	<b>paired</b> 28:21 144:14	<b>partisan</b> 12:14,24 14:22 16:2,3,5 22:19 49:6,7,18 50:18,24 51:13, 14,16,20,21 52:4, 5,19,20 55:20 59:22 61:16 74:6 80:11 85:8,12 93:7,16	<b>percentage</b> 60:5, 6 115:4,7,10 120:12,17 125:14
<b>opposed</b> 53:6 88:24 89:3 141:5	<b>pairing</b> 143:19	<b>partisans</b> 64:22	<b>perfect</b> 51:8
<b>Optimal</b> 83:13	<b>pairings</b> 28:19 119:22,23	<b>Party</b> 12:9	<b>perform</b> 22:10 23:16 54:3 120:24 122:1 123:11,13 126:14 145:10
<b>order</b> 34:1,2 37:24 40:8,21 70:19 113:2 135:8	<b>pandemic</b> 55:7	<b>pass</b> 10:13	<b>performance</b> 29:10
<b>ordered</b> 40:16 62:24 66:9 109:8	<b>panel</b> 93:24,25 95:15	<b>passed</b> 31:9 69:15 143:6	<b>performed</b> 24:3 31:12 101:6,10 126:20
<b>ordering</b> 140:18	<b>panelists</b> 94:1,3	<b>past</b> 8:22 16:11	<b>performing</b> 23:2 25:24 116:8,9
<b>ordinary</b> 17:11, 13,19	<b>paper</b> 12:4,7,12, 13,21 13:1,3,6,7 14:21 15:9,12,21 34:22 35:13,21 36:1 38:23 39:6, 14 42:4 43:2 45:3 48:24 49:1,21 50:17,22,25 51:19 54:24,25 55:2,18 58:9,11 60:13 61:22 78:16 81:20 84:20 92:6 93:12, 18 96:1,4 98:21, 23 101:2 105:11	<b>patterns</b> 17:20	<b>perimeter</b> 79:13, 14
<b>organization</b> 94:9 109:11	<b>papers</b> 30:24 31:2 35:22 37:8,10,11, 12,18,21 38:6,8, 13,19,22 39:12, 20,21 98:17 136:2	<b>pause</b> 8:8	<b>period</b> 68:20
<b>organizing</b> 71:16	<b>paperwork</b> 32:12	<b>pay</b> 119:21	<b>permission</b> 86:21
<b>outcome</b> 42:19	<b>Paradox</b> 82:20	<b>PDFS</b> 154:23	<b>person</b> 20:8 26:9 37:5 42:24 44:8, 23 49:9 51:9,10 66:22 76:20 95:12,13 116:15 117:14
<b>outcomes</b> 34:13 56:11	<b>paragraph</b> 106:14 107:3 131:5	<b>peer-review</b> 58:9	<b>personal</b> 13:12, 13 135:18
<b>over-reliance</b> 148:12	<b>paralegal</b> 154:24	<b>peer-reviewed</b> 34:10 40:18 97:19 101:1,7,10	<b>personally</b> 23:11
<b>overlapping</b> 85:1	<b>part</b> 16:20 19:7 21:6,8 27:14 30:22 32:13,16,17 34:15 38:22 40:20	<b>pending</b> 8:9	
<b>overpopulated</b> 133:19,23,25 134:6		<b>Pennsylvania</b> 19:18,21,25 20:2, 5 21:5,24 22:16 23:4,7 25:20,22, 25 26:19,25 27:8,	
<b>overpopulating</b> 132:5,17,21			
<b>overturned</b> 30:4 94:25			
<b>overview</b> 15:14 94:11,14,15 95:20			

<b>persons</b> 61:23	51:1,3,8 52:7 53:8 58:16 77:18,23,24 83:11 86:19 87:8 111:7 112:24	14 17:24 33:18,19 37:16 38:15 39:3 45:13,15,18,25 46:5 64:4 100:22, 23	<b>predecessor</b> 61:9
<b>pertaining</b> 111:18	113:25 114:1 115:8,12,19 116:3,4 117:22 118:9,15,21 120:22,25 121:5 122:4 126:23	<b>popular</b> 35:9	<b>prefer</b> 117:4,8
<b>Ph.d</b> 32:19	127:13 128:1 131:25 134:12,14, 17 136:8,12 137:14 139:3	<b>population</b> 20:25 22:14,16 26:16 51:7 65:12 113:12 116:20 119:3 120:2,11 123:9,21 125:12,14,16,17 127:2,6,10 132:24 148:20 150:1	<b>preference</b> 8:11
<b>Ph.d.</b> 32:6,7,11,22 33:9,11,19 34:2 45:12 48:4 50:3,6 100:22	145:17 148:15,23 149:1,5 150:2 151:2	<b>Population-</b> <b>dependence</b> 83:23	<b>preferences</b> 28:12
<b>phone</b> 39:18 142:18	<b>Play</b> 95:8	<b>populations</b> 22:23 78:4 84:3 95:24 124:17 145:12	<b>preferred</b> 28:3
<b>physically</b> 86:16	<b>pleased</b> 70:23	<b>portal</b> 26:14	<b>preliminary</b> 17:6 68:22,23 69:4 73:22,25 74:8,10, 13 75:4,8,13,16, 18 89:22 90:2
<b>picked</b> 7:15	<b>plurality</b> 35:4	<b>portion</b> 45:9 67:21,22	<b>premarked</b> 10:13
<b>picking</b> 64:21,22 65:10,11	<b>pockets</b> 64:21,22 65:12	<b>portions</b> 89:2 140:15	<b>preparation</b> 9:5 109:4
<b>piece</b> 36:7,8	<b>point</b> 8:7 14:12 21:22,23 22:12 32:8 34:15 38:10 50:3 54:16 68:23 70:13,17 73:16 131:4 132:12 149:6 150:24 154:8	<b>position</b> 20:8,13	<b>prepare</b> 11:7 20:24 39:25
<b>pin</b> 67:7	<b>pointing</b> 138:10	<b>Posner</b> 6:4	<b>prepared</b> 101:17 102:16
<b>Pittsburgh</b> 20:9	<b>points</b> 70:7 140:20 147:13	<b>possibility</b> 153:21,23	<b>prerogative</b> 118:3
<b>place</b> 70:1 118:3	<b>polarization</b> 14:16 55:20 56:2	<b>post</b> 61:1 63:4,12 64:10	<b>present</b> 13:21 19:17 91:22 92:17
<b>places</b> 19:8 47:9 64:15 150:20	<b>polarized</b> 126:3	<b>post-doctoral</b> 6:2 13:21 14:2 18:20	<b>presentation</b> 91:20 93:11 102:10 110:22
<b>plaintiffs'</b> 9:19,22 10:4 11:9 108:3 110:15 139:8 155:12,15,19	<b>poles</b> 135:23	<b>power</b> 42:2 43:3	<b>presented</b> 22:5 101:19 134:15
<b>plan</b> 18:6 20:18 26:10,12 30:3,5, 18 31:1,9,18 51:4 52:1,7,9 69:12 74:3,4 95:3 100:17 102:5,25 111:5 113:4,7,10, 11,13,16,17,21,22 117:19 118:19,20, 23 120:21 121:6,7 126:19,24 128:5 131:9,10,11,12,21 134:18,23,24 136:4 142:24 144:9,11,12,13, 14,21 145:15 146:1,6,7,10,11 147:18,20 149:22	<b>Police</b> 12:9	<b>practices</b> 27:13, 24 147:11	<b>presenting</b> 109:10
<b>planned</b> 18:6	<b>policy</b> 135:3	<b>practitioners</b> 79:4	<b>preservation</b> 128:16
<b>planning</b> 17:5 32:1	<b>political</b> 14:15,16, 17,21 15:13 17:10 18:1 25:19 33:9 35:14 41:13 42:11 43:3 45:3,8,20,21, 23 46:2 47:6,23 56:1 58:11,15 82:4 96:18,19,20, 23,25 98:9 114:20	<b>preceded</b> 69:9	<b>preserve</b> 28:7 128:1,8,10 146:14
<b>plans</b> 17:2 26:7, 13,18 31:3 37:6	<b>politics</b> 14:3,5,11,	<b>precinct</b> 151:1,25	<b>preserved</b> 128:6 146:10,11
		<b>precincts</b> 53:9 148:18,19 151:4,5	<b>preserves</b> 128:18
		<b>precisely</b> 26:1 128:6	<b>preserving</b> 128:15 143:20
			<b>president</b> 34:25 64:1,2
			<b>Presidential</b> 34:23
			<b>pressing</b> 15:2

<b>pressures</b> 119:3	12 82:15 83:2 86:13 88:8,16,18 89:4,5,19 91:3 98:16,21 100:24	140:4,9 141:9,12, 15	<b>Q</b>
<b>pretty</b> 32:7 36:6 99:6	104:21 108:25 112:25 113:9 138:13 146:15 148:13 151:10,12	<b>provided</b> 31:19 69:23,24,25 71:14 104:20,23 105:2, 10 110:12,19 119:23 134:19 141:19,23 142:3	<b>qualifications</b> 104:17 109:10
<b>previous</b> 58:20 100:5 128:25 136:8 141:8 143:4	<b>produce</b> 113:16	<b>providing</b> 107:6	<b>qualify</b> 97:21
<b>previously</b> 101:20 102:9 110:21 125:4 146:23 149:7,8	<b>produced</b> 72:19 95:2 128:17	<b>proving</b> 126:11	<b>quantify</b> 57:22,23
<b>primarily</b> 35:4 91:2	<b>product</b> 151:6	<b>provision</b> 75:2 102:13,19 107:20	<b>quantitative</b> 33:21 35:2 50:25 51:2
<b>primary</b> 20:21 29:18 33:18 35:22 36:1 50:5 70:23 73:17	<b>Professor</b> 46:12, 22 55:20 92:24	<b>provisions</b> 57:19 76:14 80:15 102:22 111:13	<b>Quarterly</b> 96:20
<b>prime</b> 64:20	<b>professors</b> 48:2 81:24	<b>Proximity</b> 96:13	<b>question</b> 7:7,13, 21,23 8:2,3,9 26:5 27:17 30:10 33:2 38:3 39:9 44:16 75:6 85:4 107:11 122:8,11,12,20 123:2 129:25 135:2 152:21 154:6
<b>primitive</b> 24:3	<b>program</b> 18:14 32:7,20 33:11 47:25 149:24	<b>public</b> 26:14 66:14 74:4,16 82:14,17 89:22,25 96:20	<b>questions</b> 5:9 8:18 9:2 49:23 122:14 137:5 140:13 154:18,19
<b>Princeton</b> 55:21 62:11 92:25 93:8	<b>programs</b> 48:4 87:24 148:14	<b>publication</b> 12:1, 3 48:25 59:20 61:21 63:5 81:21, 23	<b>quick</b> 152:9
<b>principal</b> 63:2	<b>progress</b> 13:3,4 38:1 78:9 81:17	<b>publications</b> 34:10 37:7 40:5 44:7 48:19 60:23 61:8,9 80:25 85:17,20,25	<b>quote</b> 130:11
<b>prior</b> 27:10 28:18 55:9 61:7 69:15 70:10 111:14 128:1,8,10,15 142:4 143:20 147:1,2	<b>prohibit</b> 49:6	<b>published</b> 13:4 19:8 34:9 36:21 37:22 40:18 50:2 58:8,12 63:23 93:12 99:10 136:2	<b>quoting</b> 130:10
<b>priorities</b> 28:3	<b>prohibition</b> 61:15 119:16	<b>publishing</b> 97:19 99:9	<b>R</b>
<b>priority</b> 28:23	<b>prohibitions</b> 28:9	<b>purport</b> 100:18	
<b>private</b> 24:25 67:1	<b>project</b> 80:1,4 102:23	<b>purpose</b> 49:20 64:19	<b>race</b> 64:20 124:8, 11
<b>privilege</b> 67:4	<b>projection</b> 80:4	<b>purposes</b> 10:19 17:18 32:1 61:24 127:15	<b>racial</b> 84:10 94:20 95:6 120:18
<b>privileged</b> 88:10	<b>prongs</b> 125:24 126:2,8	<b>pursue</b> 81:22	<b>racially</b> 126:2
<b>problem</b> 113:19	<b>proper</b> 104:16 126:21	<b>pursued</b> 63:25	<b>raised</b> 25:20
<b>problems</b> 65:10 79:25 80:3 151:24	<b>proposed</b> 52:9,11 105:12	<b>push</b> 59:8	<b>random</b> 150:2
<b>procedural</b> 67:16 88:25	<b>proposing</b> 55:24	<b>put</b> 24:17 67:7 72:21 108:10	<b>randomly</b> 64:17
<b>proceeding</b> 8:8	<b>protect</b> 28:3,9		<b>range</b> 14:13 103:21 116:17 117:24 118:1 133:16
<b>proceedings</b> 71:11 157:7	<b>protected</b> 116:8		<b>ranges</b> 14:14
<b>process</b> 6:18 20:23 22:12 31:4, 7 55:14 56:10 68:12 71:7 72:8,9 74:9 76:25 77:2,9,	<b>protection</b> 30:5,7		<b>ranked-choice</b> 62:12,21
	<b>prove</b> 125:25		
	<b>provide</b> 68:18 100:9 101:22 106:25 110:5 114:9,13,15		

<b>rare</b> 20:17	73:21 74:15	22 46:6,8,10 47:7, 20,21 48:9,13,16 51:18 54:4,6,8,12, 19 55:13 56:7,9, 14,16,18 58:16,19 59:23 60:17,21 61:14 62:3,8,15 63:10,14,17,18 64:11 65:3,6 69:14 71:7,14 73:1 75:5,10 78:22,25 79:5 80:10,24 81:8,13 82:15,24 83:6,7, 11,17,21,25 84:4, 7,12,15,19,22,23, 25 85:8,11 88:4 90:23 91:3,6,11 92:2,13 93:10,15, 23 94:5 95:5,9,19 96:9,10,14 97:5 99:2,5,7,13 100:20,24 106:15 109:5 111:9,14 112:3,12 115:14, 21 116:6 129:24 130:2 131:14,23 144:19 146:13 148:13,17 151:9, 11 152:1	<b>references</b> 16:4 57:18,19 99:21 <b>referred</b> 13:3 36:16 <b>referring</b> 104:11 106:6 111:23 132:12 134:12 <b>refers</b> 60:15 <b>reflected</b> 13:14 19:13 28:1 37:18 46:17 101:2,8,12 <b>regard</b> 75:23 113:12 <b>regarded</b> 36:24 <b>regionally</b> 22:17 <b>regression</b> 17:12,15 48:11 <b>Regular</b> 157:5 <b>regularly</b> 76:23 <b>rejected</b> 81:21 <b>rejections</b> 82:2 <b>rel</b> 130:11 <b>relate</b> 48:12 64:4 <b>related</b> 19:9 55:12,13 <b>relates</b> 45:19 83:8 <b>relating</b> 74:21 91:1 <b>relations</b> 46:1 <b>relevant</b> 101:3,7, 11 115:13 <b>rely</b> 132:9 <b>remarks</b> 92:5,23 93:4 <b>remedial</b> 52:10, 11 72:17 87:8 <b>remedies</b> 88:24 <b>remedy</b> 66:7 <b>remember</b> 35:12 40:8 45:10 49:11, 14 54:9 55:1 63:3 65:14 74:2 88:6 89:16,24 94:2
<b>rate</b> 103:4	<b>receives</b> 35:5		
<b>rationale</b> 107:7	<b>receiving</b> 60:11 68:4		
<b>re-ask</b> 7:25 38:4	<b>recent</b> 60:25 78:20 88:5 92:7		
<b>reached</b> 96:25	<b>recently</b> 58:8		
<b>reaching</b> 136:10	<b>recess</b> 32:25 59:11 99:24 136:22 152:13		
<b>read</b> 11:6 15:22 43:21 69:10 119:19 130:20 141:8 142:17 145:7 156:25	<b>recognize</b> 11:21 139:5 149:10		
<b>reading</b> 29:21	<b>recollection</b> 26:19 41:3 60:18 80:13 106:7		
<b>realize</b> 133:6	<b>recommend</b> 131:12		
<b>realized</b> 142:18	<b>recommendation</b> 66:22,24 67:19,23 69:2 87:17 131:11		
<b>reapportionment</b> 9:20,23 10:5 11:10 19:18,22 21:7,25 28:17 29:3,7 30:12 101:16 102:11 104:7 108:4,11 137:7 139:9 155:14,17,20	<b>recommendation</b> s 87:4 90:7		
<b>rearrange</b> 142:22	<b>recommended</b> 20:12		
<b>reason</b> 8:25 64:23 73:17 82:1 124:22 133:14	<b>reconfigures</b> 143:5		
<b>reasons</b> 67:14	<b>record</b> 6:24 9:13 22:20 30:11 42:13 59:14 65:22 67:1 71:22 91:16 99:22,23 153:13 156:24		
<b>rebuttal</b> 5:22 10:4 139:2,8,18 140:5, 11,22 141:21 142:14 152:21,23 155:18	<b>records</b> 98:15 103:14		
<b>recall</b> 15:21 29:21 37:9 38:16,18 39:12 41:12 54:11 56:12 59:13 61:6, 13,17 63:15 65:14 70:16 75:17,23 76:5 81:19 82:22 89:20 93:3,5 97:10,25 98:2,3,7 99:12,17	<b>red</b> 16:22 29:15 82:13 112:11		
<b>receive</b> 32:12,14 34:2 47:6	<b>redistricting</b> 12:17 14:18 15:19,24,25 16:21 18:8,13,15 19:23 20:14,24 21:5 23:7,8 26:22 27:2 29:17 30:3 32:15		
<b>received</b> 60:5 62:1 66:21 70:5	<b>refer</b> 100:11 110:15 134:18 140:20 154:8		
	<b>referee</b> 96:18 97:7,8,12 98:1,8		
	<b>reference</b> 9:14 107:21 112:3		
	<b>referenced</b> 15:9 105:25 111:17 134:11 150:18 154:9		

95:16 97:13 98:10 109:15,16 134:13 150:22	<b>represent</b> 28:24 <b>representation</b> 14:7 16:7,17 52:25 53:14 84:2 95:23 96:6 132:25 133:2 135:21	<b>research</b> 19:3,5, 12 32:15 47:13,23 96:20 101:7,11	<b>reviewing</b> 33:25 77:13 124:6 132:19 145:21 147:17
<b>rendered</b> 110:21	<b>Resident</b> 84:3 95:24	<b>respond</b> 9:2	<b>revised</b> 11:22
<b>Reno</b> 64:20 88:23 95:1	<b>responding</b> 140:11	<b>rhetoric</b> 64:1	
<b>repeat</b> 70:3 75:6 101:9 115:16	<b>response</b> 7:14,17 31:20 53:2,13,24 54:1 136:7 139:20 141:22 150:8	<b>rid</b> 61:3	
<b>rephrase</b> 7:24	<b>responses</b> 8:23	<b>Rieger</b> 5:9,11,18 10:18 11:3,11,16 32:23 33:1 59:6, 10,12 85:5,6 99:22 100:1 101:21 103:15 108:18,21,24 116:2 122:15,19, 21 128:21 129:18 130:14 136:21,23 139:11,16 147:3,8 149:14,19 150:10, 13,16 152:8,14 154:17,24 155:3,9 156:4,7,11,20,24 157:5	
<b>report</b> 9:19,21,24 10:3,4 11:9 31:16 65:19,25 66:13 69:7 72:1 73:25 100:12 101:17 102:2,4,12,16,25 103:9 104:7,22,25 105:7,16 106:2,19 107:4,5,14,15,18, 22 108:3,5,11,13, 15 109:6,19,22 110:6,13,24 112:4,18,23 113:18 115:11,19 128:15,23,25 129:11,13 130:10 131:9,18 132:9 133:11 136:7 137:8 139:2,8,18, 19 140:2,5,16,22 141:13,18,21 142:4,5,10,15,20 144:1 145:3 146:25 147:1,2 148:1,8 150:9 151:3 152:22,23 154:10 155:12,15, 18,21 156:14	<b>responsibilities</b> 20:21,22 27:16 29:10 30:22 68:5	<b>rights</b> 14:7 16:6, 15 70:25 88:22 90:21 92:20 96:5 120:8 121:8,19	
<b>reporter</b> 6:21 85:3 156:25 157:3	<b>responsibility</b> 31:12	<b>result</b> 127:1 138:3 144:7	<b>rigorous</b> 57:7
<b>reporter's</b> 7:17	<b>required</b> 21:1 27:4 88:23 105:14 143:25	<b>resulted</b> 12:18 20:17	<b>role</b> 21:13 22:11 23:3,10 27:16 28:16 29:6 30:12 35:20,21 48:25 49:24 63:1 65:24 66:1,23 67:2,20 69:5 70:21 73:9, 11,13 114:5
<b>reporting</b> 25:25	<b>requirement</b> 19:1 27:5,7,9 28:6,8 33:12 59:4 74:25 80:9,14,21 94:14 102:16 107:8 116:16 119:10 120:16 121:25 130:4	<b>retainer</b> 111:16	<b>Roman</b> 106:14 112:17,20,24 142:10
<b>reports</b> 5:22 6:7 9:6 79:21 97:12 100:11 104:1,4 105:19,20,23,25 109:5,13,14,18 119:21 129:20 139:20,21 140:11 141:8,11,23 142:7,11 143:17 151:19	<b>requirements</b> 18:23 25:11 26:3, 20,22,23,25 27:12 33:15 44:22 48:16 49:9 51:18 54:8, 12 56:13,16 60:21 61:14 62:3,7,15 63:10,14 65:6	<b>retention</b> 143:20 144:12	<b>room</b> 5:13 6:23
	75:5,9 78:24 79:2 82:25 83:6 84:25 85:11 91:6,11 92:12 93:15 94:5, 10 95:5,19 96:10 115:9,14,20 116:6 122:6 124:6 129:23 130:2 144:19 146:21	<b>retrogressed</b> 120:6 125:3	<b>round</b> 68:3
	<b>requires</b> 94:12 116:19 130:19,22 131:16	<b>retrogression</b> 113:20	<b>routine</b> 8:19
		<b>review</b> 9:4 12:1,5 14:21 15:13 28:18 30:21,23 37:22,23 38:2 56:3 78:17 97:2,3 98:16,17, 20	<b>routinely</b> 126:7
		<b>reviewed</b> 5:21 9:6 24:1 82:5 85:19, 22,24 86:1 98:13	<b>rule</b> 77:25 78:1
		<b>reviewer</b> 97:1,22 98:22	

<b>ruled</b> 70:9 87:21	<b>seed</b> 149:23 150:18	<b>setting</b> 120:19	<b>simply</b> 52:6 90:2 95:2 125:13,22 141:6
<b>rules</b> 6:18 33:5 34:24 35:3 59:16 77:22 100:5 111:17 137:1 152:17	<b>seeking</b> 115:21	<b>Seven-state</b> 83:14	<b>simultaneous</b> 31:4 60:9
<b>run</b> 73:22	<b>select</b> 20:4	<b>shaking</b> 7:14	<b>simultaneously</b> 72:25
<b>S</b>	<b>selected</b> 98:1 124:21	<b>shame</b> 47:10	<b>single</b> 38:9 76:18 106:17,22 107:9 118:18 132:23 133:1 148:24
<b>safe</b> 117:19	<b>selecting</b> 77:15	<b>shape</b> 140:10	<b>sir</b> 13:24 33:7 59:15,18 77:3 152:19
<b>SAITH</b> 157:6	<b>semester</b> 14:4,6, 20 15:3,23 37:5 45:17 71:4	<b>shapes</b> 53:17 79:18	<b>situated</b> 54:3
<b>Sam</b> 55:20 92:25	<b>seminar</b> 14:12	<b>share</b> 60:8,11	<b>situations</b> 35:8 36:2
<b>San</b> 86:12 89:9	<b>Senate</b> 9:20 11:10 19:25 21:10,17 30:14,18 66:11 67:17 68:9 75:21, 23 76:13 77:1,5, 12 100:16 101:16 102:11,25 104:7, 25 105:5,8 106:2 108:10 115:3 128:25 155:13	<b>shared</b> 73:2 141:10	<b>Sizes</b> 83:24
<b>scale</b> 42:21	<b>sense</b> 21:23 82:11 110:2,4 142:23 146:18	<b>Shelby</b> 113:4,23 114:1 118:11,21, 22 119:2 132:6, 21,24 133:1,11, 14,18,22,24 134:1,5 135:1,4,5, 11,13 145:1	<b>skills</b> 48:3
<b>scholar</b> 117:16	<b>sentence</b> 107:3 132:4,15,20	<b>shelf</b> 77:17	<b>skip</b> 40:3
<b>scholars</b> 53:4	<b>sentences</b> 38:9	<b>Shelton</b> 5:17	<b>Slavery</b> 84:10
<b>school</b> 16:14 46:11,23 71:4,5,6 90:22 91:13 97:8, 16	<b>separate</b> 46:2 55:14 140:23	<b>show</b> 53:15 55:8 126:6	<b>slightly</b> 136:15
<b>science</b> 14:21 15:13 18:1,4 33:10 35:15 41:13 45:9,21,23 47:6 82:4,5 96:19,24, 25 98:9	<b>September</b> 10:10	<b>showcase</b> 148:9	<b>slivers</b> 148:21
<b>scientists</b> 17:11 55:22,25 56:1 79:4	<b>sequentially</b> 102:8,14 105:13 106:18 107:1,17	<b>showed</b> 52:14	<b>small</b> 23:21,25 24:5
<b>score</b> 144:11	<b>serve</b> 18:24 20:14 22:4 66:4 96:25	<b>showing</b> 22:13	<b>smallest</b> 129:21 135:23
<b>scores</b> 52:15 74:6	<b>served</b> 6:10,12,13 36:23 46:19 90:15 114:21,22 140:12 151:8	<b>shown</b> 133:11 135:4	<b>smoothly</b> 6:19
<b>Scott</b> 108:21 153:18	<b>service</b> 18:23 96:17	<b>shows</b> 35:2 60:4 138:4	<b>so-called</b> 65:4
<b>scratch</b> 21:16,22 70:2,7,14 89:13	<b>session</b> 93:9	<b>sign</b> 157:1	<b>social</b> 47:23 79:3 82:4
<b>screens</b> 73:1	<b>set</b> 9:6 40:15 106:4 112:2,5	<b>signed</b> 52:8 88:11	<b>software</b> 23:3 29:8 72:14 87:24, 25 88:6 153:1,4
<b>sealing</b> 132:22	<b>sets</b> 22:3 150:17	<b>significant</b> 21:1 22:18 24:9,21 74:16 143:25	<b>Solages</b> 91:18
<b>Sean</b> 10:3 109:19 139:21 142:7		<b>significantly</b> 132:2	<b>solely</b> 53:25
<b>seats</b> 60:7,12,14		<b>similar</b> 61:20 88:17 99:6 138:20	<b>solo</b> 91:23
<b>section</b> 16:16 31:24 35:1 78:10 106:5 121:19 126:1,11		<b>Similarly</b> 7:6	<b>solution</b> 131:17
		<b>simple</b> 54:24	<b>sort</b> 22:10 29:12 32:14 33:15 37:12
		<b>Simplified</b> 83:13	52:20 56:3 64:4 69:17 79:11,17 94:11 102:10 103:20 109:6

110:22 131:21	21,22 78:3 113:5, 8 114:1 118:25 119:10 123:3 130:4,5,16 131:6 135:1,3,8 144:25 148:19	<b>starting</b> 12:15 21:23 60:3 68:10 70:1,6,13,16 77:15 85:17 86:11 109:9 143:14	<b>Statistically-based</b> 81:7 <b>statistics</b> 26:18 47:17 <b>status</b> 121:16 <b>statutory</b> 25:6 102:6 <b>stay</b> 117:23 <b>steady</b> 138:22 <b>stemmed</b> 55:19 <b>step</b> 26:10 39:8 <b>Strategy</b> 14:4 17:25 <b>strictly</b> 94:9 123:21 <b>strike</b> 23:23 27:8 38:16 43:5 44:20 48:7 64:7,8 68:1 69:23 85:9 87:15 91:9 92:9 103:7 111:21 117:2 144:16 147:15 <b>struck</b> 67:24 86:19 89:1 <b>stuck</b> 94:9 <b>student</b> 97:11 114:18 <b>students</b> 14:13 17:9 18:1,4,10,14, 25 48:2 58:24 62:25 91:4 94:23 <b>stuff</b> 28:25 <b>sub-header</b> 85:24 <b>subdiscipline</b> 46:3 <b>subfield</b> 15:14 45:20 <b>subfields</b> 33:13, 17,18 45:24 <b>subject</b> 31:1 36:22 39:4 68:23 100:9 102:11 110:6,23 130:17 144:20 147:20
<b>sorts</b> 56:4 97:2	<b>splits</b> 26:16 44:9, 11 52:17 74:1,5 113:14,24 114:7, 14 115:15,22 119:6 129:22 131:13,20 132:1,3 133:13,15 134:24 137:24 138:2,19, 23 143:10 144:8	<b>starts</b> 13:20 90:20 143:4,15,16	
<b>source</b> 29:16	<b>state</b> 9:20,22 10:5 11:10 12:8,14,22 16:22 19:25 20:19 21:2,9 24:25 25:12,14,25 26:2, 20,21,23 27:21 29:19 30:13,14, 18,20 35:5,6 44:13,14,21 48:15 49:8,17 50:24 51:17 54:7,11,17 56:13,16 57:17,21 60:21 61:13 62:1, 3,7,15 63:10,13, 19 65:5 66:7,11, 17 67:1,17 68:9 70:20 72:16 74:24 75:4,9,15 76:8,10, 13,25 77:5,12 78:24 79:1 80:9, 15 82:24 83:6 84:24 85:10 91:5, 8,15 92:12 93:15, 22 94:4,10,16,18 95:4,18 96:9,12, 13 102:5,15 108:4 112:14 115:3,13, 20 116:5,7,13,16 121:1 123:6 128:3 129:23 130:1,11, 21 131:15 132:8 133:3 137:7 139:9 144:18,23 151:15 155:13,16,19	<b>state's</b> 91:10 119:7	
<b>sources</b> 29:9	<b>start</b> 6:21 7:7 11:17 13:17 21:22 40:1 45:13 48:20 60:24 68:1 69:4 70:1,7,12,14 77:12 88:7 97:12 100:14 101:15 129:4 137:2 152:18 155:8	<b>stated</b> 53:24 126:10 150:25	
<b>South</b> 84:11	<b>started</b> 89:13,14 97:8,13,19 113:3, 10 128:9 129:9,15 139:23	<b>statement</b> 137:12	
<b>span</b> 33:13		<b>states</b> 16:15 27:1 34:12,16,19 36:24 49:4 55:12 80:15 94:17 152:6	
<b>speak</b> 24:24 67:6 70:1 105:15 123:22 130:19		<b>statistical</b> 51:13	
<b>speaking</b> 48:12			
<b>speaks</b> 135:22			
<b>special</b> 32:10 36:23 46:14,15, 17,25 47:2 65:20 66:1,4,19 67:2,18 69:7,10 70:22 72:1 73:12 86:4,7, 15,21 87:3,6,16, 20 88:8,10,16 89:6,7,12 90:6,10 91:2 95:2 114:22 124:2 129:10 151:8,9			
<b>specialized</b> 23:3			
<b>specific</b> 26:20 29:21 65:16 67:10 76:14 77:22 79:1 91:10 99:12 102:17			
<b>specifically</b> 15:24 48:13 49:14 54:10 66:19 74:18 91:13 95:17 100:21 102:1,6,21 109:16 140:15			
<b>specifics</b> 37:9 49:11 73:14 79:9 94:16			
<b>speech</b> 85:1			
<b>spelling</b> 110:2			
<b>spend</b> 104:1			
<b>spent</b> 72:10,11 91:14 142:17			
<b>sphere</b> 80:1			
<b>split</b> 19:2 27:5 37:13 76:15,17,			

<b>submit</b> 26:15 68:19 148:6	<b>system</b> 39:23 62:19 63:6 80:4	<b>teaching</b> 14:2 16:25 18:19 19:3	<b>Texas</b> 92:21
<b>submitted</b> 26:14 52:7 69:19 70:18 81:20 134:13 149:11	<b>T</b>	<b>team</b> 31:19 73:13	<b>textbook</b> 16:18 17:8
<b>subsequent</b> 128:18	<b>T-U-F-T-E</b> 60:4	<b>teams</b> 22:1,5	<b>theoretically</b> 82:7
<b>substance</b> 93:3	<b>Tab</b> 10:15 11:5 139:5 146:24 149:9 150:5 154:22 155:2	<b>technical</b> 72:15 80:8 86:15,22,24 114:15 151:25 152:2,4,5,6	<b>theory</b> 82:4
<b>substantially</b> 116:20	<b>table</b> 74:2	<b>techniques</b> 48:11	<b>thing</b> 31:17 51:22 59:2 65:22 78:6 83:8 93:17 133:8 137:12,17 149:1 154:21
<b>substantive</b> 67:15 104:18 110:8 114:15 141:9,15,17	<b>tailored</b> 88:23	<b>technology</b> 114:11	<b>things</b> 15:1 16:4 19:1 27:22 28:10 39:25 48:11 49:13 51:23 57:14 76:3 80:19 87:9 98:15 104:17 107:14 109:7 140:19 142:22 153:17
<b>sufficient</b> 24:9 123:9 145:12	<b>taking</b> 121:7	<b>ten</b> 19:23 24:13	<b>thinker</b> 36:24
<b>sufficiently</b> 124:16	<b>talk</b> 7:2 14:24,25 16:1 39:16,17 56:9,21 57:3 79:22 86:6 91:1 92:11 93:22 95:12,15,22 102:10 110:23 116:15 117:11 132:4 139:3	<b>tend</b> 135:18,25	<b>thinking</b> 42:9 56:4
<b>suggest</b> 124:23 127:15	<b>talked</b> 15:3 16:11 27:19 29:8 50:23 91:12 92:6 94:23	<b>Tennessee</b> 5:11 9:20,22 10:5 11:10 12:22,24 16:25 59:3 80:20 91:19 99:18 102:13,22 105:14 106:20 107:8 108:4 111:1,6,9, 18 112:5,13 119:4,11 123:7,25 127:9 130:3,20 138:8 139:9 148:18 151:1,3,16 155:13,16,19	<b>thinks</b> 53:8 64:4
<b>suggested</b> 128:16 140:22,23	<b>talking</b> 24:5 44:13 50:17 60:13 91:15 95:16,17 100:16, 18 111:4,25 121:20 124:14,15, 17 125:21 129:12 136:18 154:11	<b>Tennessee's</b> 111:13	<b>Thornburg</b> 36:20 73:20
<b>suggestions</b> 140:17 141:4	<b>talks</b> 13:11 15:15, 24 16:18 49:4 79:2 90:18	<b>tentacles</b> 79:17	<b>thought</b> 43:14,17 45:24
<b>suited</b> 66:23	<b>targets</b> 120:19	<b>term</b> 117:18 125:10	<b>thoughts</b> 92:13
<b>Sumter</b> 88:4 89:10	<b>task</b> 30:17 50:5 66:11	<b>Terminology</b> 81:11	<b>Threat</b> 84:10
<b>supposed</b> 19:2	<b>tasked</b> 20:11 27:22 55:23 66:5 67:18 120:25	<b>terms</b> 26:2 42:7 56:10 76:10 111:20 112:17 117:11 120:11 146:5,21 151:15 153:11	<b>three-part</b> 34:8
<b>Supreme</b> 20:5,19 22:25 30:9 31:18 49:21 51:5 66:3, 16 116:11,19 130:21 131:15	<b>taught</b> 14:4 16:9 17:7 18:16 47:18	<b>terribly</b> 77:6	<b>TIFT</b> 10:22 11:13 103:11 108:17,20 115:24 122:9,16 128:12 129:7 130:7 136:17 139:13 147:5 149:16 150:12 154:19 155:8 156:1,6,9,17,22 157:2,4
<b>surface</b> 80:1	<b>tea</b> 56:24 57:2	<b>Tesler</b> 34:5	<b>tight</b> 131:25
<b>surprising</b> 77:6	<b>teach</b> 14:3,6 16:21 17:24	<b>test</b> 116:25 125:24 135:20,22	<b>time</b> 8:10,14 9:10 10:12 11:11 15:16,17 19:2,9 39:7 45:22 46:21 72:10 81:4 85:3 87:20 90:14 91:14 93:5 96:3 97:10
<b>surrounding</b> 143:9 144:5	<b>teaches</b> 48:1	<b>testified</b> 5:6 6:7	
<b>Swatley</b> 5:16		<b>testimony</b> 100:10 101:23 103:2	
<b>sworn</b> 5:6			
<b>syllabus</b> 16:10,24			
<b>symmetrical</b> 79:18			
<b>symmetry</b> 16:5 51:15			

101:9 108:9  
109:17 115:16  
122:18 128:24  
131:8,25 134:8  
151:22 153:23  
154:12  
**times** 6:23 23:18,  
19 39:18 46:16  
72:18 81:22  
**title** 9:16 12:7 45:2  
51:19  
**titled** 12:6 35:13  
156:12  
**titles** 9:15  
**TN\_APPLE\_**  
**TEST\_3\_0288**  
156:16  
**today** 8:23 9:1  
25:19 129:12  
**today's** 9:5  
**tools** 50:17 80:7  
83:10 93:7 148:14  
**top** 66:12 156:15  
**topic** 38:24 65:1  
101:2,7,11 102:17  
**topics** 14:14,17  
15:4 18:5,6 37:13  
**total** 45:6 74:10  
75:25 98:24 103:8  
113:6,14 119:6  
125:17 128:20  
**toyed** 21:18  
**tracts** 53:7  
**trade-offs** 131:14  
138:20  
**traditional** 17:15  
27:2 146:13  
**training** 47:6,12  
48:7,9,17 50:7  
**transcribing** 6:25  
**transcript** 10:8  
**traveled** 68:14  
**treat** 42:11  
**treatises** 29:12

**Trende** 9:8 10:3  
109:19 139:21  
141:22 142:8  
143:18  
**trial** 67:22 68:4  
86:19  
**Triple** 95:8  
**true** 6:9,10  
**Trump** 64:2  
**truthful** 8:23  
**truthfully** 9:2  
**Tufte** 60:4  
**turn** 139:4  
**turnaround**  
157:5  
**turned** 98:5  
**Turning** 57:6  
**turns** 58:7  
**two-party** 60:9  
**type** 42:2 51:13  
52:20 63:5 101:6  
**types** 24:4 74:22  
79:3  
**typically** 46:12  
60:2 97:3,11  

---

**U**  
**U.S.** 22:25 31:18  
33:21 34:24 42:6,  
11 55:15 56:4  
59:25 61:24  
116:11,19 125:10  
**Uh-huh** 72:7  
81:16 83:15 97:24  
124:4 125:8  
131:3,7 148:3  
**Uhlancer** 34:6  
**ultimately** 20:13  
21:14 52:14 57:14  
67:13,24 68:6,25  
74:13 87:3,10,12  
88:24 90:9 115:7  
122:13  
**unable** 55:5

**unanimously**  
20:18  
**Unanticipated**  
54:22  
**uncertainty**  
146:20  
**unconstitutional**  
70:10 87:19  
120:20 130:18  
**undergraduate**  
14:8 18:25 71:19  
114:18  
**underneath**  
150:5  
**understand** 6:6  
7:21,23 8:2,5  
12:23 17:10 20:25  
22:22 33:3 58:6  
69:10 81:17 82:14  
100:2 116:12  
122:3 131:17  
136:24 137:1  
145:7 146:17  
152:15,17  
**understanding**  
17:20 22:21 34:13  
39:3 40:20 59:5  
69:21 78:1 116:18  
118:13,14 120:19  
145:8 146:17  
**understood** 8:3  
25:9  
**undisputed**  
140:24 141:1,7  
 **undocumented**  
61:22  
**unequal** 42:24  
**unfamiliar** 25:22  
**unique** 102:15  
**unit** 17:25  
**United** 16:15  
**University** 6:3  
13:22 16:13 20:9  
32:4 33:10 37:2,4  
46:9 47:5 48:1  
55:21 71:19  
92:21,25 93:8  
95:10,13 114:19

**unrelated** 47:21  
**unusual** 8:19  
26:20,21  
**updated** 11:25  
13:12  
**upwards** 36:21  
**urban** 118:10,19  
119:10 144:25  
**user** 24:4  
**Utah** 86:12  
**utilize** 29:7,8  

---

**V**  

---

**vague** 26:5 57:19  
58:23 80:17  
**valid** 8:20  
**Varela** 5:15  
**variables** 17:17  
**variation** 12:10  
**Vegas** 47:5  
**verbal** 7:14,17  
**versus** 23:1 29:24  
36:20 49:2 64:5,  
20 73:20 79:13  
86:11 88:4,23  
89:9,10 95:1  
115:5 130:11  
137:11  
**VI** 106:14 107:3  
**video** 7:15  
**view** 74:4  
**violated** 30:7  
**violating** 144:22  
**violation** 54:19  
64:19 66:7 88:25  
121:8 124:23  
126:1,11  
**violations** 88:22  
**Virginia** 94:20  
114:24 152:4  
**vote** 16:12 20:18  
26:9 35:9 44:9,23  
49:9 51:9 60:9,10

96:5 116:15 117:15	<b>weeklong</b> 47:15	<b>workshops</b> 48:18	114:4,18 152:22
<b>voted</b> 126:7	<b>weeks</b> 74:10,11 119:24 129:15	<b>world</b> 15:2	<b>zigzag</b> 79:17
<b>voter</b> 42:2	<b>well-known</b> 36:17	<b>world's</b> 58:3	<b>zip</b> 52:24 53:5,10, 15 54:16,18
<b>voters</b> 29:24 42:11 49:2	<b>western</b> 119:3	<b>Wright</b> 88:4 89:10	<b>Zoom</b> 92:23
<b>votes</b> 60:5,15 126:6	<b>whites</b> 126:7	<b>writ</b> 31:21	<b>Zooming</b> 73:1
<b>voting</b> 14:7 16:6, 14 62:12,18,21 63:6 65:12 70:25 84:17 88:22 90:21 92:20 120:2,8 121:8,18,19 122:2,23 124:13, 23 125:1,12 126:3,12,22 144:21,22 145:3, 6,9,16 147:19,21	<b>widely</b> 43:23	<b>write</b> 31:16 37:12	
<b>VRA</b> 49:10 65:13 73:10,18 120:23, 24 122:6 123:11, 13,18 124:7,10 125:21 126:14,18 127:17	<b>win</b> 34:19 35:9	<b>writing</b> 31:20 102:9 108:25 110:13,22 112:18 147:2	
<hr/>			
<b>W</b>			
<hr/>			
<b>wait</b> 56:25 57:1	<b>words</b> 39:22 82:16,19	<b>written</b> 15:12,17 30:24 101:1 109:3	
<b>walk</b> 69:3 112:25 142:14 143:13	<b>work</b> 14:1 18:22 19:8,18 21:19 36:7,9 46:9,11,17 52:20 60:24 65:21 72:9,25 85:18 86:3,25 87:2 88:10 90:11 91:2 99:4 102:24 105:18,24 111:7 115:10 129:14,17 131:24 135:18 139:23 153:3	<b>wrong</b> 31:21 65:11 148:22	
<b>wandering</b> 95:15	<b>word</b> 104:11 111:5	<b>wrote</b> 36:3 49:15 104:6,8 106:5 108:14,16 140:1,3	
<b>Wang</b> 55:20 92:25	<b>worded</b> 104:15	<b>WWF</b> 64:3	
<b>wanted</b> 68:19 75:20 154:6	<b>words</b> 39:22 82:16,19	<hr/> <b>Y</b> <hr/>	
<b>Washington</b> 61:1 63:12	<b>work</b> 14:1 18:22 19:8,18 21:19 36:7,9 46:9,11,17 52:20 60:24 65:21 72:9,25 85:18 86:3,25 87:2 88:10 90:11 91:2 99:4 102:24 105:18,24 111:7 115:10 129:14,17 131:24 135:18 139:23 153:3	<b>y'all</b> 155:5	
<b>waste</b> 81:4	<b>worked</b> 27:20 29:15 46:14,16 86:15 96:2 103:6, 7,8 104:14 105:23 110:1 114:23,24 115:1 117:9 152:25	<b>year</b> 26:6 97:13 99:11 101:25	
<b>ways</b> 28:15 41:25 42:9 43:15 50:6 64:19 76:2 79:3 80:19 82:12 123:24	<b>working</b> 12:4,12, 21 13:1 37:8,10, 18,24 38:5,12,19, 23 39:6,12,14,20, 21 78:16 92:6 96:1 114:25 129:4 139:17	<b>years</b> 15:18 19:23 25:21 40:11 50:2 97:9 98:10 130:15	
<b>website</b> 13:12,13 111:18,23 112:2, 4,6,11 134:11	<b>workshop</b> 47:13, 16,19	<b>yeses</b> 7:16	
<b>week</b> 39:18 98:5		<b>York</b> 66:4,8,17 67:11 68:7,14 69:15,22 71:6,8, 13 74:24 75:1 76:13,18 77:23 88:15,18,24 89:14 91:2,13,14,15 109:18,23 115:2 123:12,17 124:2, 19,22 129:11,17 151:8 152:3	
		<b>York's</b> 68:5	
		<b>young</b> 48:2 71:3	
<hr/>			
<b>Z</b>			
<hr/>			
		<b>Zach</b> 71:18,23 72:14 87:2 105:19	