

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF OHIO
EASTERN DIVISION

THE OHIO ORGANIZING)
COLLABORATIVE, ET AL,)
)
PLAINTIFFS,) CASE NO. 2:15-CV-1802
)
vs.)
)
JON HUSTED, ET AL,)
)
DEFENDANTS.)
_____)

TRANSCRIPT OF THE BENCH TRIAL PROCEEDINGS - VOLUME III
BEFORE THE HONORABLE MICHAEL H. WATSON
THURSDAY, NOVEMBER 19, 2015; 10:12 A.M.
COLUMBUS, OHIO

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1 Thursday Morning Session

2 November 19, 2015

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4 THE COURT: Before we begin, let's clear up the motion
5 in limine. We have an opinion in draft but essentially I'm
6 going to allow the testimony and sort it out when we write the
7 opinion.

8 MR. SPIVA: Thank you, Your Honor.

9 THE COURT: With respect to the transcripts, we have
10 counsel for --

11 MR. MCTIGUE: OGT.

12 THE COURT: OGT and I believe the director of LSC
13 coming to see us tomorrow. They're not available today. In
14 the meantime, have you read them yet, the transcripts?

15 MS. COONTZ: I have reviewed some of the transcripts,
16 yes, Your Honor. And we've talked to -- we talked last night.
17 Mr. McTigue and I spoke this morning whether there's any sort
18 of stipulation that we would be able to reach. There have been
19 some developments in the interim.

20 THE COURT: Stipulations are good things.

21 MS. COONTZ: Stipulations are good things. I don't
22 know whether the status is such that we're going to be able to
23 reach those but we're going to work on it.

24 THE COURT: Know at this point that right now they're
25 coming over. Whether they testify remains to be seen.

1 MS. COONTZ: The witnesses?

2 THE COURT: Yes.

3 MS. COONTZ: To clear up, Your Honor, the motion in
4 limine, I wasn't quite sure which one are we talking about? I
5 apologize.

6 THE COURT: With respect to your expert, Professor
7 Hood.

8 MS. COONTZ: Thank you.

9 THE COURT: And Sean Trende.

10 MS. COONTZ: Thank you.

11 THE COURT: Do you have one pending?

12 MS. COONTZ: No. I just wasn't sure. There have been
13 some -- just given the issues I wasn't sure which one we are
14 talking about.

15 THE COURT: Mr. Spiva, you stood up.

16 MR. SPIVA: Yes. I had misunderstood also which
17 motion in limine. I thought you were talking about the proffer
18 that we made with respect to Dr. Timberlake's testimony. I
19 guess there wasn't really a motion in limine. So I should have
20 understood that it was Dr. Hood.

21 THE COURT: I should have been more specific. I
22 haven't ruled on that yet and I intend, in all likelihood, to
23 rule on it when it comes out in the wash in the opinion.

24 MR. SPIVA: Okay. Thank you, Your Honor.

25 The other thing, and it sounds like this is probably

1 better an issue for tomorrow, especially if we can see whether
2 we can work out a stipulation. I think the issue that's
3 connected to the witnesses who are coming is really with
4 respect to the videos. The transcripts we, I believe, could
5 authenticate through our paralegal because those were sent out
6 to a court reporting service and we have the signed
7 certification. Even if those didn't come in for some reason,
8 as long as the videos came in, I think they could be used as an
9 aid to essentially interpret, decipher the videos themselves
10 just so one didn't have to watch all however many hours it is.

11 THE COURT: It's compelling viewing.

12 MR. SPIVA: Yes. Ms. Roberts would tend to agree with
13 you having viewed most of them herself.

14 THE COURT: Keep working on the stipulation.

15 MR. VOIGT: Your Honor, because the issue of the
16 Timberlake proffer came up, I do have a little bit of
17 additional information that may be helpful to Your Honor. I
18 could bring it up now.

19 THE COURT: Yes. That's fine.

20 MR. VOIGT: Judge King's decision denying the
21 supplemental, the request for supplemental reports was made on
22 October 26th and Rule 72 requires that an appeal from a
23 Magistrate's decision must be made within 14 days. The
24 plaintiffs did not appeal that decision within 14 days. They
25 were required to do so by November 9th.

1 In addition, I also would note that in December of 2014
2 the plaintiffs, in fact, Perkins Coie sent public records
3 requests to the General Assembly clearly related to the subject
4 matter of this case. I actually have copies here if Your Honor
5 would like that. And in January, on January 23rd of 2015, they
6 sent public records requests to the Secretary of State, again,
7 clearly related to this case. Again, some of the requests
8 mirror their discovery requests in this case.

9 At that time, Mr. Spiva had mentioned some issues with
10 receiving information from the boards. At that time they were
11 able, certainly, to issue records requests to the boards in
12 December and January. The subpoenas that they sent out, we
13 received notice that they sent out their subpoenas, or at least
14 we received a letter that they were going to send their
15 subpoenas, on July 15th. Dr. Timberlake testified on Tuesday
16 that he was retained in April and I believe the plaintiffs
17 filed their case in May.

18 THE COURT: But he wasn't retained until July is what
19 I understood. Said he didn't get paid until July, right?

20 MR. SPIVA: I frankly can't remember what he said in
21 terms of when he got paid.

22 THE COURT: I'm sure that's what he said.

23 MR. SPIVA: But, Your Honor, as I had mentioned, with
24 respect to the first issue about when Judge King's order was
25 issued, what we were asking for there is a supplemental report

1 based on a slew of data from 2012 and 2008 the state did not
2 produce, despite the fact they had it in the NAACP case. And
3 we didn't actually -- I didn't actually elicit any testimony
4 from Dr. Timberlake about that data which Judge King ordered
5 the state to produce.

6 What he was trying to do was answer Dr. McCarty's
7 rebuttal report which he had never had an opportunity to do.
8 In the normal course of things, you often have initial report,
9 rebuttal report and reply. This is not a situation like you
10 would have with, say, a briefing where there's kind of a known
11 body of law and both sides get their best shot. Oftentimes you
12 still have a reply in that situation, but here we had a
13 criticism which Dr. Timberlake hears for the first time when
14 Dr. McCarty files his rebuttal report. And so this is the
15 first opportunity that he's had to respond to that.

16 I must say on the records request issue, the State -- we
17 issued very specific requests for production to the State
18 asking for all of the materials from the NAACP case,
19 specifically asking for this data, although we were led to
20 believe that only the counties had this data. So they were
21 under an obligation to produce this since the date that we
22 issued our request for production.

23 They have had this data, as they've said the other day
24 and as Dr. McCarty testified in his deposition, since the
25 spring, at least since the spring of last year. Dr. McCarty

1 actually started to do an analysis of this data reflecting 2010
2 and 2014 since the spring of last year. That case settled
3 before he had issued his report on that.

4 THE COURT: Hold on. Let's let him finish first.
5 I'll get back to you.

6 MR. SPIVA: I'm sorry. I didn't realize he wasn't
7 done.

8 MR. VOIGT: I'm sorry. I guess I should have sat
9 down.

10 THE COURT: Are you finished?

11 MR. VOIGT: Well, I have one more comment. I just
12 wanted to clarify one thing that Mr. Spiva said. And that is
13 that he had mentioned that they requested the data that we're
14 talking about. They did not. What they requested is the
15 material that we produced in the NAACP matter. We gave them
16 everything.

17 The data that Dr. McCarty relied upon in his report, we
18 produced that data immediately upon producing the report. Just
19 as with every other witness, every other expert witness in this
20 case, the report has been produced and the data has been
21 produced.

22 THE COURT: Let's get the testimony in the record so
23 that I've got -- I'm operating from the same body of knowledge
24 that you guys are. I haven't seen -- I haven't had the benefit
25 of reviewing these reports yet.

1 MR. VOIGT: And one --

2 THE COURT: I'll give you an opportunity to brief it
3 if you want to brief it afterwards.

4 MR. VOIGT: Okay. Thank you, Your Honor.

5 THE COURT: Let's do that.

6 MR. SPIVA: Okay. Thank you.

7 THE COURT: Let's take the time we have now to get our
8 witnesses in. Call your next witness.

9 MS. CALLAIS: Good morning, Your Honor. Plaintiffs
10 call Rachel Bowman.

11 THE COURT: If you'd approach the witness stand, raise
12 your right hand and be sworn.

13 (Witness sworn.)

14 THE COURT: Have a seat over there.

15 You may proceed.

16 MS. CALLAIS: Thank you, Your Honor.

17 - - -

18 RACHEL BOWMAN

19 Called as a witness on behalf of the Plaintiffs, being first
20 duly sworn, testified as follows:

21 DIRECT EXAMINATION

22 BY MS. CALLAIS:

23 Q. Ms. Bowman, could you please state your full name for
24 the Court?

25 A. Rachel Bowman.

1 Q. And where do you currently live?

2 A. New Albany, Indiana.

3 Q. And what do you do for a living?

4 A. I'm a digital consultant for Social Movement
5 Technologies.

6 Q. And have you ever lived in Ohio?

7 A. Yes. I lived in Ohio from March through November 2012.

8 Q. And where did you live?

9 A. In Bowling Green in Wood County.

10 Q. And what brought you to Ohio in March of 2012?

11 A. I worked as a field organizer for the president's
12 re-election campaign.

13 Q. And what I'd like to do, Ms. Bowman, right now is just
14 focus on your work in 2012. Can you tell the Court what you
15 did in your role as a field organizer?

16 A. I worked to identify supporters and asked them to
17 volunteer with the campaign and worked with the volunteers to
18 register voters, persuade voters and turn out voters in early
19 voting and on election day.

20 THE COURT: This is a challenge for me. You guys are
21 talking to each other very quickly and I'm trying to -- slow
22 down, if you would, please, so that we can get a clear record.
23 Thank you.

24 MS. CALLAIS: Do you need her to repeat anything, Your
25 Honor.

1 THE COURT: No.

2 BY MS. CALLAIS:

3 Q. Was there any particular group of voters who you worked
4 with or a particular area where you worked?

5 A. I worked with the students at Bowling Green State
6 University and some of the surrounding community in Bowling
7 Green.

8 Q. And when did you start your work with the students at
9 Bowling Green?

10 A. I started working with them in March. We did a pledge
11 to register campaign. And throughout the summer I worked with
12 students that stayed there over the summer, which is a small
13 portion of the students. And then beginning when the fall
14 semester started in August, I worked to register the students
15 on campus.

16 THE COURT: And this is all 2012?

17 THE WITNESS: Yes.

18 THE COURT: All right.

19 BY MS. CALLAIS:

20 Q. And why did you begin to work to register the students
21 on campus in the fall of 2012?

22 A. At Bowling Green State University, students register
23 with their actual physical dorm address. So each dorm that
24 they live in has a different address that they have to register
25 with.

1 Students almost always move residence halls or
2 off-campus housing between academic years. So if a student is
3 living in one dorm their freshman year, they're going to be
4 living in a different dorm their sophomore year. And if they
5 had registered to vote in the spring semester, they would have
6 to update that registration in the fall semester. So we didn't
7 start our registration efforts until we were sure that students
8 would know their address for the November election and would be
9 living there and be able to register there.

10 Q. And was there any particular time where you had a major
11 push to register voters?

12 A. We had two major pushes. We worked throughout the fall
13 semester to register every day, but during move-in weekend when
14 freshmen students are moving in, often they move in with their
15 parents. Their parents come to help them and there's a lot of
16 activities with the students and their parents, and we found
17 that when we approached students with their parents, their
18 parents would kind of second what we had to say and tell the
19 student that it is a good idea to go ahead and register to vote
20 right now. So we had a lot of success during move-in weekend.
21 We also did a big registration push during golden week.

22 Q. And approximately how many students would you register
23 each day?

24 A. The weekdays we would register about 100 students a day.
25 We registered far less on the weekends.

1 Q. And what would you do with the registrations after you
2 received them?

3 A. We would take them back to the office and data enter
4 them so that if they had given us their contact information, we
5 had it, and we could keep track of how many registrants we had.
6 And then we would turn them in to the county clerk's office.

7 Q. And after you turned those registrations in to the
8 county clerk's office, did you ever have any other interactions
9 with the county clerk about them?

10 A. We visited the county clerk's office several days a week
11 with registrations and some of the times upon our visits they
12 would give us registrations we had given them a few days prior
13 that there were problems with so that we could attempt to find
14 those students and help them register correctly. Sometimes
15 students didn't know their driver's license number or the last
16 four of their Social Security so they would, like, sometimes
17 leave required fields blank.

18 Occasionally the county clerk would give us those forms
19 and we would try to contact those students so that we could get
20 them actually registered. But it was difficult because a phone
21 number and e-mail address weren't a required field on the
22 registration form and we encouraged students to give their
23 phone number in case there was a problem but most students
24 chose not to. So we would try to find the students. We would
25 often work with the school to get their e-mail address and try

1 to contact them via e-mail but more times than not we didn't --
2 we weren't able to follow up with the students and let them
3 know of the problems with their registration.

4 Q. Ms. Bowman, approximately how many students did you
5 register overall?

6 A. 5,201.

7 Q. That's very precise, Ms. Bowman.

8 A. Yeah. Our goal given by the campaign was to register
9 3500 students. My boss and I decided that we wanted to try to
10 register 5,000 students. So every number that we got after
11 5,000 was pretty exciting. We had a thermometer on the wall
12 and we drew the mercury coming out of it.

13 Q. Ms. Bowman, at any point in time during your
14 registration activities after move-in day did you have another
15 push for registration?

16 A. Yeah. We pushed really hard during golden week.

17 Q. And why was that?

18 A. There were a few reasons we wanted to push during golden
19 week. One was that it was the end of the registration period
20 and we wanted to make sure that every student who wanted to
21 participate in the election was registered and would be able
22 to. We also used it as an opportunity to get students to start
23 voting and register at the same time so that they could, you
24 know, it was very convenient for them to be able to vote and
25 register in kind of one fell swoop. We hoped as well that we

1 would be able to get some students to the courthouse that had
2 had problems with their registration so that those would be
3 able to be fixed in time to vote in that election.

4 Q. And, Ms. Bowman, through the course of your work, did
5 you encounter any students who had problems with
6 transportation?

7 A. Definitely. I worked with a lot of interns that were
8 very dedicated to our campaign and a lot of them would share --
9 I had one intern named Sharmaine and she shared a car with her
10 girlfriend. Some days she would have access to the car, some
11 days her girlfriend would. Another one of my interns, Zach, he
12 shared a car with his little brother who was in high school and
13 lived somewhere nearby, I don't remember which city. And so
14 some weeks he would have a car, some weeks he wouldn't have a
15 car. And most of my other interns that I worked with did not
16 have a car on campus so we would try to do things like arrange
17 carpools and things like that when we could.

18 Q. And you said you worked with a number of interns. Did
19 you ever encounter any interns or students that you worked with
20 who had issues or problems with their schedules?

21 A. Yes. So students' schedules, for the most part, will
22 have a little bit of class consistency. You'll find that
23 students have a certain schedule on Monday, Wednesday, Friday
24 and a slightly different, at least class schedule, on Tuesday,
25 Thursday. So we would -- we could be able to plan around that.

1 But most of the student volunteers and interns that I
2 had also had jobs. Sometimes it was a job on campus, sometimes
3 it's a part-time job off campus. But we had to be very
4 flexible with our schedules, especially with the interns. We
5 would plan how they would get their internship hours in and
6 then they would call me and say that they took an extra shift
7 at work or that their shift at work got changed or they had
8 forgotten a term paper and needed to dedicate their night to
9 that. So their schedules were pretty evolving.

10 Q. And the registration work that you did in golden week,
11 did it change any from the work that you had done prior to that
12 point?

13 A. Yeah. Prior to that point we would ask students when we
14 would, like, find them on campus or we would visit classrooms
15 and ask them to register to vote or to update their
16 registration. During golden week, we would ask them if they
17 wanted to register and vote right now, if you want to go ahead
18 and vote. And the campaign actually provided us with two golf
19 carts. Bowling Green's campus was about three blocks from the
20 early-vote location which was the Wood County Courthouse. So
21 it was walkable from campus but it was kind of a long walk.

22 Where we had the golf carts so we could ask a student,
23 do you want to go vote right now? You can register and vote
24 right now. We take them on the golf cart, drop them off at the
25 courthouse and pick them up from the courthouse and we could

1 tell them that they'd be all done in 20 minutes.

2 Q. And if you were to walk to the courthouse to or do you
3 know how long it would take you to walk from campus to the
4 courthouse?

5 A. Yeah. I made that walk quite a few times from campus to
6 the courthouse and we also asked some students, because there
7 were a few students that wanted to all walk together, which is
8 great. However they want to get there. So we asked some
9 students to tell us how long it took them and they told us
10 about an hour with the voting. And from my own experience,
11 walking from campus to the courthouse and then taking care of,
12 you know, some sort of courthouse business and walking back to
13 campus would take about an hour.

14 Q. And did you ever drive the golf cart yourself?

15 A. Yeah. I drove it a few times. We tried to make sure
16 that it was driven by students as much as possible so that the
17 students could ask their friends to ride with them. But as I
18 said earlier, their schedules were changing pretty often.

19 So we had a schedule set up of what student would drive
20 the golf cart when and then when a student couldn't fulfill
21 that shift for any reason, I would take over and drive the golf
22 cart. There were also a few times that I just rode on the golf
23 cart because one of my interns was driving and I needed to talk
24 with her to, like, work out the schedule, upcoming schedule,
25 things like that.

1 Q. And just based on your observations with the students
2 that you took over, did you see students voting on their own,
3 with other people, how did they go vote?

4 A. Most of the students that I saw vote were voting with
5 their friends. They were coming in groups and we would usually
6 ask them, like, if we saw a group of two or three if they want
7 to all come vote with us.

8 Q. And did you ever work with any campus organizations
9 during golden week?

10 A. Yes. I had worked with campus organizations earlier in
11 the year to reach out about our candidate and let them know why
12 they should vote for the president. And when they were
13 supportive of our candidate we would ask them if they want to
14 get involved, to volunteer for the campaign, things like that.
15 And prior to golden week, I reached out to those organizations
16 and asked if they wanted to arrange for their whole club to
17 come vote together. And we had several groups that took us up
18 on that.

19 The NAACP, they were ones that actually did a march.
20 They didn't use our golf carts but they all marched to the
21 polls together. The black student union, Latino student union,
22 this group called Black Girls Rock, and another group, I think
23 it's Big, Black Intellectuals group. I might not be right on
24 the name. All those groups used our golf cart to go vote
25 together.

1 Q. Just so I can clarify, did you reach out only to those
2 groups or did you reach out to other groups on campus as well?

3 A. We reached out to all the groups that we had met with
4 prior that had been supportive of our candidate but those were
5 the groups that were really excited about the potential of all
6 going and voting together. We also reached out to the
7 Gay-Straight Alliance. I think it's called Rainbow at BGSU.
8 But they didn't want to go vote together. We reached out to
9 environmental groups. There's an antipoverty group and they
10 just weren't excited about the prospect. But the other groups
11 I mentioned were pretty excited.

12 Q. And, Ms. Bowman, did you have a method of tracking how
13 many people or who got on your golf cart during that time?

14 A. Yeah. When we worked with the clubs we asked them to
15 keep track of how many of their members were coming. But we
16 also, on each golf cart, had sign-in sheets so that we could
17 keep a tally at the end of the day. And during early voting I
18 would visit the courthouse usually twice a day and during
19 golden week at the end of the day the courthouse would tell us
20 how many people had registered to vote that day and how many
21 people had voted that day. So we were able to kind of compare
22 the numbers.

23 Q. And in your sign-in sheets, what sort of information did
24 you track about the individuals who were getting on your golf
25 carts?

1 A. We asked them to write their name and then we had check
2 boxes for are you going to register today, are you going to
3 vote today, are you going to do both. And then we had a check
4 box for do you want to volunteer with the Obama campaign and a
5 space for them to write their contact information.

6 Q. And during that time about how many individuals did you
7 bring on your golf carts to go utilize golden week?

8 A. I don't remember the exact number but it was around 800.

9 Q. And based on the reviews that you did on your sign-in
10 sheets and the checks that you did each day, about how many of
11 those individuals were registering and voting at the same time?

12 A. I would say 60 to 70 percent. It was definitely the
13 majority of people that we took.

14 Q. And in the work that you were doing, did you ever
15 encounter any students that were going to reregister or update
16 their registration?

17 A. Yeah. Definitely some of the upperclassmen were
18 planning to do that. And I had a volunteer who had registered
19 to vote with us at a College Democrats meeting prior to golden
20 week and was planning -- he checked that he was going to vote
21 because he had already registered and found out when he arrived
22 at the courthouse that there had been a problem with his
23 registration he was unaware of and he ended up updating it at
24 that time and being able to go ahead and vote.

25 Q. So, Ms. Bowman, after golden week ended, did the focus

1 of your work change?

2 A. Yeah. We weren't able to register students anymore that
3 would be able to participate in that upcoming election. So our
4 focus changed from registration to getting students to go vote
5 early.

6 Q. And why did you focus on getting students to go vote
7 early?

8 A. Well, as a campaign, we were aware that there was one
9 polling place on campus for all the students that lived on
10 campus and we were concerned that there might be long lines on
11 election day. So getting as many students to early vote as
12 possible was a goal so that we would be able to potentially
13 reduce those lines. We also had a meeting with the student
14 activities center of the school early in the fall semester and
15 they kind of confirmed those fears for us that, you know, there
16 might be lines on election day.

17 Another concern we had --

18 MS. PIERCE: Objection, Your Honor. Hearsay.

19 THE COURT: Sustained.

20 THE WITNESS: Another concern we had, especially when
21 I worked with upperclassmen, was that while there was one
22 polling place on campus, it only served the students that lived
23 on campus. And when I talked to some of our volunteers and
24 some of just the upperclassmen supporters that I encountered, a
25 lot of them believed that they were supposed to vote at the

1 student union which isn't the case if they lived off campus.
2 They were going to be voting in a Bowling Green precinct. So
3 like a school or church or something. And so we wanted to let
4 students know about early voting and encourage them to do that
5 because we thought that it could cut down on some confusion of
6 upperclassmen that thought they were going to vote at the
7 student union when that's not their right polling place.

8 BY MS. CALLAIS:

9 Q. Did your team continue to provide rides to the early
10 voting location during this time?

11 A. Yeah. We still had our golf carts and we had them
12 running every weekday so that we could bring students to go
13 vote.

14 Q. And did you actually go to the early-voting center
15 during the early voting period?

16 A. Yeah. I was there almost every day. It was one of my
17 jobs to check up on the early-voting center and see if there
18 was anything, if there were long lines or if I saw something
19 that didn't look right that we could address.

20 Q. And did you witness any lines during that time period?

21 A. During early voting there was only one day that I saw
22 long lines. There was one day of Sunday voting and that was
23 the day that there were really long lines pretty much all day.

24 Q. And can you just describe those lines for the Court?

25 A. Sure. The Bowling Green courthouse is pretty small and

1 the lines were coming outside of the courthouse. And I was
2 there for a while and there was a really long line and there
3 was an older gentleman in line who had a cane or a walker and
4 he seemed uncomfortable. So I asked him if he would appreciate
5 if I brought him a chair and he said he would.

6 So I went to our office, which was about a block away,
7 and I brought him a chair. We also brought water bottles and
8 granola bars for everyone in line just to encourage them to
9 stay. I was told by a security guard that we could not bring a
10 chair to the steps of the courthouse so I put it back in my car
11 and shortly after that I saw the older man leave.

12 Q. Ms. Bowman, did you also do work on election day?

13 A. Yes. Quite a bit.

14 Q. What did you do on election day?

15 A. My main responsibility on election day was to make sure
16 things ran smoothly in the office. We had volunteers coming
17 in. We would get them packets and they would go out and knock
18 on doors. I was overseeing all of that.

19 Q. And did you actually go to any polling locations at some
20 point on election day?

21 A. I got a call from our press secretary who had heard of
22 lines at our polling place on campus and so I went and brought
23 some supplies with me to see what I could do to help manage the
24 lines. So I was at the student union where the underclassmen
25 vote on campus.

1 Q. When you arrived at the student union did you see a
2 line?

3 A. Yes. There was a really long line. The way the student
4 union is, there's one really big entrance with steps that go
5 all the way up to the second floor, and the polling place was
6 in one of the ballrooms on the second floor but it was like on
7 the other side of the building as the steps. And I went inside
8 and I saw that the line snaked like outside the ballroom, down
9 the hallway and then there were about a dozen people standing
10 outside on the steps in line.

11 Q. And did you see anyone leave the line?

12 A. Yes. I saw some students walk up to students that were
13 in line and talk with them and then leave. And then I saw some
14 students, even some who seemed pretty close to the front of the
15 line, just leave the line while I was there.

16 MS. CALLAIS: No further questions, Your Honor.

17 THE COURT: Thank you, Ms. Callais.

18 You may cross.

19 - - -

20 CROSS-EXAMINATION

21 BY MS. PIERCE:

22 Q. Good morning, Ms. Bowman. My name is Sarah Pierce. I
23 represent the defendants in this case, Secretary Husted and
24 Attorney General DeWine. I just have a very few questions for
25 you.

1 All this work that you mentioned that you did in 2012 in
2 Bowling Green, you were working at that time for President
3 Obama's re-election campaign; is that right?

4 A. That's right.

5 Q. And you live in Indiana; is that correct?

6 A. I do now, yes.

7 Q. Ms. Bowman, are you aware that any voter in Ohio can
8 look up their polling location on the internet?

9 A. Yes. I helped some students do that.

10 Q. And those students that you mention that you saw leaving
11 the line on election day in 2012, you don't know whether they
12 were leaving the line to perhaps go to their correct voting
13 location, do you?

14 A. I heard some students talking saying that the line was
15 too long so that they were leaving. But some could have gone
16 to a different polling location.

17 Q. You just don't know, right?

18 A. That's right.

19 Q. You don't know whether they left the line and came back
20 at a later time to vote that was more convenient to them?

21 A. I don't know.

22 Q. You don't know that.

23 Ms. Bowman, are you planning to return to Ohio in 2016?

24 A. No.

25 Q. Is there anything in Ohio law that you're aware of that

1 would prevent the golf cart voter campaign that you mentioned
2 in your testimony?

3 A. As far as I'm aware, the registration period and the
4 early-vote period don't overlap anymore. So we use the golf
5 carts during all of early vote to take students to vote, so
6 that could still happen. But as far as I'm aware, students
7 wouldn't have the opportunity to update their registration and
8 vote at the same time like some of my students did.

9 Q. But a campaign could still use a golf cart to shuttle
10 students to an early-voting location to vote early in 2016,
11 right?

12 A. As far as I know.

13 Q. And as far as you're aware, registration procedures in
14 Ohio have not changed, right?

15 A. As far as I know.

16 Q. So the registration drives you mentioned could still
17 proceed as they did in 2012, correct?

18 A. Yes.

19 MS. PIERCE: No further questions.

20 THE COURT: Ms. Callais?

21 MS. CALLAIS: No further questions.

22 THE COURT: Thank you, ma'am. You may step down.

23 Who's next?

24 MS. COONTZ: Your Honor, at this time the state calls
25 Dr. Nolan McCarty.

1 MR. SPIVA: And just to be clear, Your Honor, this is
2 one of the things where we worked out the order. We haven't
3 rested.

4 THE COURT: Right. So the record should reflect that
5 this is the State's witness out of order.

6 Doctor, if you'd approach the witness stand and raise
7 your right hand.

8 (Witness sworn.)

9 THE COURT: If you'd have a seat on the witness stand.

10 - - -

11 NOLAN MCCARTY, PH.D.

12 Called as a witness on behalf of the Defendants, being first
13 duly sworn, testified as follows:

14 DIRECT EXAMINATION

15 BY MS. COONTZ:

16 Q. Dr. McCarty, can you please state your name, spelling
17 your full name for the record?

18 A. Yes. My name is Nolan, N-O-L-A-N, McCarty,
19 M-C-C-A-R-T-Y.

20 Q. Would you prefer to be called doctor or professor?

21 A. Professor would be great.

22 Q. Where are you currently employed?

23 A. Princeton University.

24 Q. What is your position at Princeton University?

25 A. I'm a professor of politics and public affairs with the

1 Susan Dod Brown Professor of Politics and Public Affairs. I'm
2 chair of the politics department.

3 Q. How long have you been at Princeton?

4 A. Since 2001.

5 Q. And what other positions have you held at Princeton
6 University?

7 A. I've also, in addition to being an associate professor,
8 before getting promoted I was also the Acting Dean and the
9 Associate Dean of the Woodrow Wilson School of Public and
10 International Affairs.

11 Q. And do you have a specific specialty or focus at
12 Princeton?

13 A. Yes. I work in the area of American politics doing
14 quantitative work on legislative and electoral behavior.

15 Q. And is that the type of work you've done throughout your
16 career?

17 A. Yes, it is.

18 Q. And let's talk about your career. Before Princeton,
19 where were you employed?

20 A. I've had two other full-time academic jobs. Prior to
21 Princeton I was at Columbia University where I attained tenure.
22 And then before that my first job I was at the University of
23 Southern California School of Business.

24 Q. Let's talk about Columbia. You said you were a tenured
25 professor?

1 A. Briefly a tenured professor. For about six months
2 before leaving for Princeton.

3 Q. And in what area?

4 A. Political science.

5 Q. What about Stanford?

6 A. I've been a visitor to a variety of centers at Stanford
7 twice.

8 Q. In what areas? When you say a visitor, what's that
9 mean?

10 A. One is the Center for Advanced Study of Behavioral
11 Sciences which is an interdisciplinary social science research
12 center. And the other was the Hoover Institution which is a
13 public policy think tank.

14 Q. Have you also previously been employed at USC?

15 A. Yes. I was an assistant professor of business economics
16 in the business school at USC.

17 Q. How long were you there?

18 A. For three years.

19 Q. And before USC?

20 A. I obtained my Ph.D. at Carnegie Mellon University in
21 Pittsburgh.

22 Q. And what is your Ph.D. in?

23 A. Political economics.

24 Q. What is political economics?

25 A. It's an interdisciplinary degree that combines political

1 science and economics.

2 Q. What about other professional activities. Are you
3 involved in any other professional activities other than the
4 universities that you've just described?

5 A. Yes. I'm the -- I was the founding co-editor of the
6 *Quarterly Journal of Political Science*.

7 Q. What's that?

8 A. That is a journal dedicated to publishing the
9 cutting-edge work in quantitative and mathematical political
10 science.

11 Q. What is quantitative and mathematical political science?

12 A. Quantitative would involve the use of data and
13 statistical methods to reach conclusions about political
14 phenomena. And mathematical political science is more broad.
15 It would be the use of mathematical tools to generate models of
16 political behavior.

17 Q. So you mention this journal. The name of the journal?

18 A. The *Quarterly Journal of Political Science*.

19 Q. And any other professional activities outside of the
20 quarterly journal?

21 A. I've been on a variety of other editorial boards. I've
22 held positions and professional associations, and I've also
23 served as an expert witness in other litigation related to
24 voting.

25 Q. So we talked about your employment. What about your

1 education? Can you briefly describe for the Court your
2 educational background?

3 A. Yes. As I stated earlier, I have a Ph.D. in political
4 economics which, again, is an interdisciplinary work in
5 economics and statistics econometrics. So I did intensive
6 course work in those areas at Carnegie Mellon. My
7 undergraduate degree is from the University of Chicago in
8 economics which again combines the liberal arts education in
9 Chicago with kind of technical work in economics.

10 Q. Have you previously published in this area of political
11 science that you just testified to?

12 A. Yes. I published extensively in political science using
13 quantitative methods to study issues such as political
14 polarization, electoral turnout, the effects of redistricting.

15 Q. Were these books, were they journals?

16 A. A combination of books and journals.

17 THE COURT: Is there a stipulation as to his
18 qualifications?

19 MR. KAUL: We have no objection, Your Honor.

20 THE COURT: Let's do that.

21 MS. COONTZ: Any objection to his CV?

22 MR. KAUL: No.

23 THE COURT: Very well. I recognize him as an expert.

24 MS. COONTZ: Thank you, Judge.
25

1 BY MS. COONTZ:

2 Q. Professor McCarty, you're here as an expert witness.
3 When were you first contacted about this case?

4 A. In this case I began the engagement in August.

5 Q. And what is your understanding of this case?

6 A. My understanding of this case, in a nutshell, is that
7 the plaintiffs are suggesting that changes in the availability
8 of early voting and a variety of other election procedures that
9 took place just after the 2012 election would have an impact on
10 the opportunities for Ohioans to vote, in particular,
11 African-American voting in Ohio.

12 Q. Have you previously looked at some of the laws at issue
13 in this case?

14 A. Previously, yes. I was an expert witness in a previous
15 case brought by the NAACP. So as part of that litigation I
16 looked more specifically at the changes that took place.

17 Q. What were you asked to look at in the context of this
18 case?

19 A. I was asked, in particular, to look to see whether there
20 was individual-level evidence that there was a change in voting
21 behavior between 2010 and 2014 that could be attributed to the
22 laws that changed around 2012.

23 Q. Were you also asked to respond to other experts in this
24 case?

25 A. Yes, I was.

1 Q. Which experts?

2 A. Professor Timberlake and Professor Yang.

3 Q. The request that we just talked about for your work in
4 this case, how do those relate to your education and
5 experience?

6 A. I'm sorry. I don't quite understand.

7 Q. Let me rephrase that question. So how does your
8 education and experience relate to the issues in this case?

9 A. Well, one of my expertise is to evaluate how changes in
10 political institutions and procedures affect political
11 behavior. So looking at the effect of an election law on
12 changes on political behavior fits in nicely with previous work
13 that I've done both on the effects of turnout and on
14 redistricting.

15 Q. We're going to turn to your report. You have a series
16 of binders in front of you, and in Defendants' Exhibits 19
17 through 47, can you pull out that binder, please, and turn to
18 tab 20. Do you recognize this document?

19 A. Yes. That's my report for this case.

20 Q. We're just going to start diving into the report itself
21 but we're not going to go in chronological order. So what I
22 want to do is start with section 6 of the report. If you could
23 turn to section 6.

24 A. Okay.

25 Q. Are you there?

1 A. Yes.

2 Q. So in section 6 of the report, what does this section
3 talk about?

4 A. This section is primarily my response to the report
5 offered by Professor Timberlake on the presumed impacts of the
6 elimination of golden week in Ohio.

7 Q. And did you read Dr. Timberlake's report regarding the
8 elimination of golden week?

9 A. Yes, I did.

10 Q. If you recall, what did he conclude?

11 A. He concluded that it was likely that the elimination of
12 golden week disproportionately impacted African-American
13 voters.

14 Q. And based on your education and experience, do you agree
15 with this conclusion?

16 A. I don't believe that the claims he makes about the
17 impact on individual African-American voters can necessarily be
18 sustained from the types of analysis that he provided and
19 relies upon.

20 Q. And so let's talk about the type of analysis in which
21 Dr. Timberlake engaged. In your report in section 6 you
22 outline two issues that you have with Dr. Timberlake's opinion.
23 What was the first issue that you found in reviewing
24 Dr. Timberlake's report?

25 A. So the bulk of his original analysis for this opinion

1 was based on reported usage of golden week in Ohio counties
2 where he divided counties into high-minority counties and
3 low-minority counties as well as low-minority/low-income
4 counties and compared rates of utilization of golden week
5 across different sets of counties.

6 Q. In your earlier testimony you talked about individual
7 voter behavior and that's what you looked at, correct?

8 A. Yes. That's what I strived to do.

9 Q. So what is the difference between an analysis of
10 individual-level voter behavior and the analysis that
11 Dr. Timberlake conducted?

12 A. His analysis is highly aggregated, meaning that instead
13 of being able to identify how a particular individual
14 participated in the 2012 election, he could only look at rates
15 of golden week usage at a very high level, the county level,
16 and then tries to draw inferences from that about how
17 individuals behave. Yet, that's problematic for a variety of
18 reasons.

19 Q. What are those reasons? Why is that problematic?

20 A. Well, for starters, it attributes these aggregate
21 patterns to individual behavior despite the fact that they can
22 be accounted for in other ways. So, for example, suppose we
23 observe that a county that was hypothetically, this is not an
24 actual county, but hypothetically it's an 80 percent
25 African-American county and ten percent of the voters used

1 golden week. It would be hard to know whether that high rate
2 of usage of golden week is attributed to the fact that the
3 county's highly African-American or that white voters in
4 counties that are highly African-American used early voting,
5 golden week at higher rates.

6 So we just can't distinguish between a relationship
7 between the race of the county, the racial composition of the
8 county and the utilization of golden week and assume that
9 that's based on individual-level behavior. It could simply be
10 that the smaller groups are behaving differently in heavily
11 minority counties.

12 Q. Is this the aggregation bias that you refer to in your
13 report?

14 A. Yes. This is an instance of that. That we can't
15 necessarily draw conclusions based on associations of
16 aggregated data.

17 Q. And what is the ecological inference?

18 A. Technically, ecological inference is the process of
19 trying from aggregate data to draw a conclusion about
20 individual-level data. We usually refer to it as the
21 ecological-inference problem because it's very difficult to
22 solve and there are no surefire ways of getting around it other
23 than to give off and use individual-level data.

24 Q. So is using the ecological inference sound methodology
25 for drawing conclusions about the impact of law changes on

1 individual voters?

2 A. I don't believe so. First of all, counties are very
3 highly aggregated. So they're actually -- most counties, the
4 racial population is not 100 percent or zero percent. They're
5 usually mixed and therefore, it would be very hard to detect
6 small changes in the rate of golden-week usage based on data
7 that's so heavily aggregated and therefore possible that the
8 behavior in question is driven by not the majority group within
9 the county but by the behavior of minority groups.

10 It's also subject to what social scientists call
11 omitted-variable bias. There may be any number of things that
12 occur on the county level that influence the rates of
13 golden-week participation that may correlate or be associated
14 with the racial composition in the county but not directly
15 related to that.

16 So, for example, assume that a political party decided,
17 as part of its strategy, to use golden week in order to
18 mobilize its voters. If they chose that strategy in different
19 counties and it just so happened that their supporters were
20 heavily concentrated in minority counties, it would appear that
21 the partisan strategy generated a racial disparity even though
22 it was a strategy that was doing it, not some underlying
23 feature of the individual voters themselves.

24 Q. So can ecological-inference methodology allow one to
25 take into consideration the activities of a political campaign

1 on voter -- with respect to voter turnout or variable usage of?

2 A. Not directly. Not if one simply looks at the simple
3 association of racial composition and golden-week utilization
4 without incorporating information about partisan strategies or
5 other features of the county such as the location of voting
6 sites, et cetera.

7 Q. And in Dr. Timberlake's analysis, did he control for
8 these variables?

9 A. No. He presented what we call bivariate relationships.
10 Just comparing rates of usage across minority counties and
11 nonminority counties without controlling for what we call
12 confounders, other features, variables which might be
13 associated with particular counties but be unrelated to the
14 racial composition of those counties.

15 Q. Would one of those confounders be a particular
16 campaign's involvement in an election?

17 A. It well could be.

18 Q. Now, that is the first issue that you note in your
19 report with Dr. Timberlake's analysis. You note a second issue
20 with Dr. Timberlake's analysis in your report. Can you briefly
21 describe for us the second issue to which you refer?

22 A. The second issue concerns that even if we take his
23 ecological-inference analysis at the county level is valid, the
24 effects that he uncovers are actually quite small. That I
25 found that essentially the difference between a very large

1 minority county and nonminority county and the rate utilization
2 was essentially something like 78 voters out of 100 -- out of
3 100,000 registrants. So that's a very small effect.

4 So even if it were a real effect, it would be a small
5 effect. But given also that it's a small effect, it suggests
6 that the relationship could easily be reversed by the
7 incorporation of other variables such as partisan strategies,
8 location of voting centers, et cetera.

9 Q. And Dr. Timberlake did not consider any of those other
10 variables in reaching his conclusions, correct?

11 A. No. I don't believe so, no.

12 Q. Now, in your report you also address Dr. Timberlake's
13 use of Dr. Daniel Smith. Are you familiar with Dr. Daniel
14 Smith's report?

15 A. Yes. Yes, I am. I responded to it as part of the
16 previous litigation in the NAACP case.

17 Q. And that's the same report upon which Dr. Timberlake
18 relies in his opinion, correct?

19 A. That is correct. That's the same report.

20 Q. When Dr. Timberlake relied on Dr. Smith's data based on
21 his report, did he replicate Dr. Smith's data or analysis?

22 A. I don't believe so. In his initial report I believe his
23 words were that he read it and he found the methodology
24 conclusion sound.

25 Q. And again, you had previously reviewed this report,

1 Dr. Smith's report, correct?

2 A. Yes. That's correct.

3 Q. And let's take each of Dr. Smith's conclusions as
4 endorsed by Dr. Timberlake because those are outlined in your
5 report. Had you previously reviewed each of the conclusions
6 outlined in your report?

7 A. I'm sorry?

8 Q. Each of Dr. Smith's conclusions endorsed by
9 Dr. Timberlake?

10 A. Yes. Each of the conclusions that Dr. Timberlake relies
11 upon were addressed directly in my reports for the NAACP case.

12 Q. If we can turn to the first conclusion upon which
13 Dr. Timberlake relied. What was the conclusion that Dr. Smith
14 reached that was adopted by Dr. Timberlake?

15 A. Yes. Dr. Timberlake reports that Dr. Smith finds that
16 in 2012, across 84 of Ohio's 88 counties, there was a positive
17 and statistically-significant relationship between the number
18 of African-Americans in a census block and the number of early
19 in-person absentee votes during the golden week period,
20 indicating that voters in census blocks had a higher percentage
21 of African-Americans were more likely to vote during golden
22 week.

23 Q. Had you previously reviewed this conclusion?

24 A. Yes, I had.

25 Q. And do you have any opinions about it?

1 A. Yes. Even though census blocks are considerably smaller
2 than counties, they still potentially suffer from the same
3 types of aggregation bias on which I criticized the report on
4 counties. So, again, just simply by observing that census
5 block with a particular racial composition had a particular
6 early in-person usage, we don't know whether or not that's
7 because the majority of that block behaved in that way or
8 whether the minority behaved exceptionally favorably toward
9 early in-person voting in that block.

10 So the same difficulties arise in deriving conclusions
11 about individual-level behavior from census-block data as we
12 encounter using county-level data.

13 Q. And is your -- in your previous rebuttal report to
14 Dr. Smith's initial report in which this conclusion was
15 included, does Dr. Timberlake account for your previous
16 rebuttal to this conclusion?

17 A. It doesn't appear to be the case. My report's not cited
18 and the statements that are made in Dr. Smith's report are
19 basically verbatim from Dr. Smith's report. So I don't see any
20 adjustment to the criticisms.

21 Q. And you mentioned the use of census-block data. What is
22 this type of data that you criticized with respect to
23 conclusion one?

24 A. So the census block is the smallest unit of analysis for
25 which the Census provides census data. So it's a very small --

1 it's a very small unit. There's like 11 million of them in the
2 United States. About a million of them actually have no people
3 in them whatsoever. But some can be quite large, several
4 thousand people.

5 But for an urban place, a census block pretty much
6 corresponds to a city block. So if you can imagine the number
7 of people who typically live in a city block, that would be
8 roughly the number of people in a census block.

9 So Dr. Smith and -- Dr. Timberlake relied upon Dr. Smith
10 and looked at the racial composition of census blocks and
11 related that to the levels of early in-person voting.

12 Q. Are there other possible explanations for the conclusion
13 reached in conclusion number one?

14 A. Sure. Exactly same problems arise at the county levels
15 continue to rise in the use of census blocks. If partisan
16 strategies tend to be concentrated into neighborhoods that have
17 a particular racial composition then those partisan strategies
18 would appear to generate spurious relationships between early
19 voting or golden-week voting in the racial composition of those
20 neighborhoods.

21 Also some neighborhoods, some census blocks are clearly
22 closer to voting sites than other sites and therefore, things
23 like the proximity of the voting site, the access to the public
24 transportation, all the things that happen geographically which
25 might incidentally be correlated with race could influence the

1 extent to which voters utilize golden week.

2 Q. In your opinion, is conclusion number one a justified
3 conclusion based on the analysis conducted?

4 A. No. I don't think the conclusion follows from the
5 analysis that was conducted.

6 Q. Moving on to conclusion number two, had you seen this
7 conclusion before?

8 A. Yes, I have.

9 Q. And what was the conclusion that Dr. Timberlake
10 initially reached -- excuse me, Dr. Smith reached that
11 Dr. Timberlake adopted in this case?

12 A. So in this instance, this is another analysis conducted
13 by Dr. Smith out of concerns about ecological inference. The
14 idea that we can't simply know, in a racially-diverse census
15 block, who's doing what. So the strategy here was to take
16 homogeneous census blocks, those that are 100 percent
17 African-American, and compare those to homogeneous census
18 blocks that are 100 percent white and look to see whether the
19 usage of golden week was higher in the 100 percent
20 African-American blocks than it was in the zero percent
21 African-American blocks.

22 Q. Do you recall how many counties were used in this
23 analysis?

24 A. In 2012 it was 84 out of 88. In 2010 it was five
25 counties.

1 Q. Did you find that to be problematic?

2 A. I did not find the use of 84 counties in 2012 to be
3 especially problematic but I did find the conclusions based on
4 five counties in 2010 to be an issue.

5 Q. Why?

6 A. Well, because the counties that were selected for the
7 analysis differed from the counties that were excluded from the
8 analysis in important ways. The most important difference was
9 that the excluded counties had a higher percentage of white
10 voters but they also had a higher percentage of early voters
11 and therefore, the 79 excluded counties happen to be more white
12 and more engaged in early voting than the counties that were
13 included. And that's the sort of bias sample that can skew
14 results.

15 Q. So what was the problem in conclusion number two with
16 comparing the homogeneous black census blocks with the
17 homogeneous white census blocks?

18 A. The primary problem is that most of Ohio's population
19 does not live in such blocks so a very large number of voters
20 are excluded from analysis and were led to say it's okay to
21 extrapolate to those voters who are not included in the
22 analysis, and I don't find that assertion well-founded. It's
23 also true that even with exclusively homogeneous census blocks,
24 the role of partisan strategies and proximity of voting sites
25 could also contaminate those inferences just as easily as they

1 could in the analysis that we previously discussed.

2 Q. So the comparisons in conclusion two, do those
3 accurately reflect the census blocks in the state of Ohio, for
4 the whole state of Ohio?

5 A. It's impossible to know whether those conclusions
6 generate to census blocks throughout the state of Ohio.

7 Q. Moving on to conclusion three, what was the third
8 conclusion that Dr. Smith reached that Dr. Timberlake relied
9 upon?

10 A. So conclusion three is based on an additional analysis
11 that Dr. Smith did where he's able to use a methodology known
12 as the method of balance to test to see whether it's even
13 possible that there's no racial difference in the use of early
14 voting. So the method of balance, loosely speaking, will tell
15 you what is the highest possible racial disparity consistent
16 with the data and what is the lowest possible racial disparity
17 consistent with the data. If that lower bound is less than
18 zero then we would say the method does not suggest that it's
19 necessarily the case that there's a racial disparity.

20 My difficulty -- my concern about this citation is that
21 in my rejoinder to Dr. Smith, I pointed out that he had
22 incorrectly applied the method, that he had used an incorrect
23 formula. And therefore, if you used a correct formula you
24 would find that the lower bound would be often less than zero
25 in many nonhomogeneous census blocks and find that it's

1 completely possible, given the data, that there was no racial
2 disparity.

3 Dr. Smith, in his rejoinder to me, acknowledged the
4 error, recomputed the analysis and showed that, in fact, for
5 almost all census blocks that were less than 96 percent
6 African-American, the lower bound was in fact below zero yet he
7 does not -- Dr. Smith himself does not acknowledge this in his
8 report. It just appears in the figure.

9 Q. So just to kind of sum that up. When you initially
10 analyze conclusion three, you found it to be incorrect?

11 A. Yes. I found a considerable error in the analysis.

12 Q. And what did Dr. -- you issued a rebuttal report to
13 that effect?

14 A. Yes. That's correct.

15 Q. And in response to that rebuttal, what did Dr. Smith do?

16 A. He corrected his analysis.

17 Q. And is the conclusion three that appears in
18 Dr. Timberlake's report the corrected analysis or is that the
19 initial analysis that was wrong?

20 A. That's based on the initial analysis which was wrong.

21 Q. And anywhere in Dr. Timberlake's report did he recognize
22 the fact that Dr. Smith had actually changed conclusion three?

23 A. I find no evidence that he was aware of that.

24 Q. So Dr. Timberlake's relying on an incorrect conclusion?

25 A. Yes. As stated, it's incorrect. He notes that this

1 holds for neighborhoods with at least 90 percent black
2 population. The correct analysis should say it should hold
3 only for neighborhoods with at least 96 percent black
4 population.

5 Q. So what does that mean exactly?

6 A. It means that for almost all census blocks, except for
7 those that are 96 percent African-American or 96 percent white,
8 we can't rule out that there's no racial disparity in the
9 utilization of golden week.

10 Q. So when Dr. Smith reran his calculations, what was the
11 result?

12 A. As I said, for all but the very most homogeneous census
13 blocks it was impossible to establish a definitive racial
14 disparity in the utilization of golden week as a voting method.

15 Q. So ultimately Dr. Smith concluded that there was no
16 evidence of racial disparity in the use of golden week?

17 A. His figures suggest that. The text around the figure
18 doesn't make that conclusion.

19 Q. And Dr. Timberlake never acknowledges that?

20 A. Not that I am aware of, no.

21 Q. So turning to conclusion four. What was conclusion
22 number four that Dr. Timberlake reached as relying on what
23 Dr. Smith previously --

24 A. As I mentioned in my answer before, in addition to the
25 analysis of 2012, Dr. Smith relies -- does an analysis of five

1 counties in 2010. As I stated earlier, however, those counties
2 differ from the other counties in important ways, including the
3 racial compositions and the utilization of early in-person
4 voting. So in social science terms, we would not say those
5 five counties are a random sample of the counties and
6 therefore, it would be dangerous to try to generalize results
7 from those five counties to the entire state of Ohio.

8 Q. So is it a reliable method to extrapolate the findings
9 from five counties to all 88 counties in Ohio?

10 A. It would be if those counties were a random sample or
11 that their demographic and political data was a good match for
12 the rest of the state, but in this case, it was not.

13 Q. You've discussed the difference between looking at
14 individual voter behavior and using aggregate data to draw
15 conclusions. Is there a more reliable or -- strike that.

16 What is a reliable method for determining the impact of
17 law changes on individual voter behavior?

18 A. I think the gold standard for determining whether or not
19 there's an ineffective law change in individual behavior is to
20 use individual level behavior and look to see how the
21 individual behaved before the law changed and to compare that
22 with how the individual behaved after the law changed.

23 Q. Is that what you did in this case?

24 A. Yes.

25 Q. And I said we were going to kind of jump around a bit.

1 We started with section 6. I'm going to ask you to turn to
2 section 2 of your report which starts on page 5.

3 Does this section of your report outline the methodology
4 that you used in this case?

5 A. Yes, it does.

6 Q. And what exactly were you trying to determine in
7 response to what Dr. Timberlake had found?

8 A. So my primary concern was, again, mostly focused on the
9 changing availability of early voting in Ohio. And so I sought
10 to compare the behavior of individuals in 2010 before those
11 changes took place with how that same individual behaved in
12 2014 after those laws were in force.

13 Q. Let's talk about your use of 2010 versus 2014. Why did
14 you look at those two years, those two elections?

15 A. Well, the logic of the experiment or exercise, if you
16 will, is that we want to compare an election before the law
17 changes with one afterwards. So it was not -- we were not able
18 to do that for a presidential election because there had been
19 no presidential elections held under the new procedures. So
20 that consideration initially led me to look at a comparison of
21 individual behaviors in the two midterm elections surrounding
22 the changes, the changes in the law.

23 THE COURT: These are midterm generals, correct?

24 THE WITNESS: Yes. Midterm generals. November
25 elections in 2010 and 2014.

1 BY MS. COONTZ:

2 Q. Let's talk about your use of midterm elections. Why did
3 you use midterm elections?

4 A. Well, the reason -- the primary reason, the first reason
5 is those were the only two elections for which I could do the
6 experiment that I wanted to do. The second, again, using the
7 experimental analogy is that it's well understood property that
8 when you do something like an experiment, you want it to be as
9 noncontaminated by other factors as possible. You want to go
10 into an experiment with clean petri dishes and clean test
11 tubes. You don't want a lot of kind of extraneous things
12 getting in the way of the conclusions that you draw from your
13 experiments.

14 I think comparisons of presidential general elections
15 have the kind of contaminants which might make it hard to
16 detect the extent to which change in electoral law influenced
17 individual behavior. For example, presidential elections,
18 especially in Ohio, are highly contested, lots of resources are
19 expended to mobilize voters. There's lots of television
20 advertising. There's a large cultural sentiment that there's
21 an election going on. All of these things could drive people
22 to vote.

23 Midterm elections are a bit more subdued affair.
24 They're still important, still very large numbers of people
25 participate. But we're able to more isolate the direct impact

1 of an election law changes because we've been able to strip out
2 all the dirty parts of the test tube and focus on what's really
3 important, the direct impact of the availability of convenience
4 voting on whether or not an individual votes or not.

5 Q. And all of these factors that could impact a
6 presidential election that you've just testified to, did
7 Dr. Timberlake control for any of those in his aggregate data,
8 in his use of aggregate data?

9 A. Other than comparing one election to another and noting
10 that this is a presidential election, this is a midterm
11 election. There's no attempt to kind of incorporate
12 information about partisan strategies or voting sites or
13 television advertising or any of those factors which might also
14 drive turnout.

15 Q. So let's talk about your analysis on the change in laws
16 to voter behavior in Ohio between 2010 and 2014. Can you
17 describe for us the methodology that you used to conduct your
18 analysis?

19 A. So let me start with the type of data that was available
20 to be used. So I started out with a voter file that was drawn
21 from January of 2015 for which Clark Bensen provided, which he
22 collected from a variety of state counties and from
23 election-machine vendors.

24 Q. Who is Clark Bensen?

25 A. Clark Bensen is an expert in the collection and

1 maintenance of political and electoral data.

2 MR. KAUL: Object, Your Honor, to the extent that
3 that's a legal conclusion.

4 THE COURT: You're objecting to his --

5 MR. KAUL: Evidence that he's an expert.

6 THE COURT: Okay. Thank you.

7 MR. KAUL: He's on the witness list so I don't want
8 evidence that he's an expert from this witness.

9 THE COURT: He's just telling you who he is at this
10 point.

11 THE WITNESS: I would say I've been a customer of
12 Clark's for several years. So even prior to any legal
13 engagements I have used him as a source for data that I've used
14 in a variety of academic projects.

15 BY MS. COONTZ:

16 Q. So the data that Clark Bensen gave you, you said it was
17 a voter file. How large was this voter file and what did it
18 contain?

19 A. I believe it was just above 7 million voters and it
20 contained -- the most important things that it contained were
21 whether or not someone voted in 2010, in 2014, and if they
22 voted, did they vote on election day or did they vote by mail
23 or did they vote early in person. And if they did vote early
24 in person, on what day did they vote early and in person.

25 Q. And the data, when you received the data, did you

1 question its reliability?

2 A. No, I didn't.

3 Q. And once you had it, what did you do with this data?

4 A. If I can just back up. There's some additional things
5 in the data that are important for what I did. Ideally because
6 of the issues that arise in this case, one would want to not
7 just simply compare whether or not the law impacted individuals
8 but you want to know whether there was a disparate impact
9 across different groups of individuals. In particular, whether
10 it disproportionately affected African-American turnout or not.

11 Unfortunately, from a social science view, the Ohio
12 voter files do not record the racial identity of the voters and
13 so, therefore, it would be impossible for me to do that
14 important part of the analysis. Fortunately, there's a
15 statistical procedure that's gaining widespread currency in the
16 social sciences for which one is able to use the surname, the
17 last name of an individual, as well as information about where
18 that person lives.

19 So you're combining the fact that different surnames are
20 used by different racial groups at different rates. So some
21 names are commonly used by African-Americans and some are not
22 so commonly used by African-Americans. And then combining that
23 with information about where they live, whether it's likely
24 that an African-American lives in this census tract or that
25 census tract. And we're able to using kind of basic kind of

1 statistical principles combine that information to determine
2 the likelihood that an individual voter identifies as an
3 African-American.

4 So the second step of the data collection that Clark
5 engaged in was to take in the information from addresses in the
6 voter file and using that to locate each of the voters in
7 census tracts or other census groups so that I could use the
8 data on surnames, the data on the racial composition in
9 different census areas to estimate the likelihood that each
10 individual voter identified is an African-American.

11 Q. You talked earlier about the use of census block versus
12 census tract. Did you have any concern about the use of census
13 tracts with respect to this data?

14 A. My concern was about the use of census blocks. I use
15 census tracts, which are considerably bigger than census
16 blocks. There were several concerns that led me to use census
17 tracts rather than census blocks.

18 The primary one is that the census data is from the 2010
19 census, so the racial compositions of the census blocks would
20 be true as of April of 2010. But the voter list was drawn --
21 it was drawn in 2014. So because census blocks are very small,
22 people are moving in and out of them all the time. People can
23 move just down the street, across the street. In a few cases I
24 believe that they can move within the same building and move
25 from one census block to another. So the kind of churn of

1 population over approximately a five-year period over such a
2 small unit suggested to me that the racial composition data at
3 the census-block level would be very, very noisy.

4 Alternatively, if you go to a census tract, I have less
5 concern about those problems. One, because the census tracts
6 are larger. Many of those movements cancel out. It's much
7 more unlikely that a person moves from one census tract to
8 another because that often means moving from one town to
9 another or one large neighborhood to another. That type of
10 mobility is less oftenly observed. So I felt it would be a
11 much more reliable analysis if I didn't rely heavily on the
12 census blocks.

13 The other concern that I had in doing this analysis was
14 that I wanted to be conservative in my imputation that a person
15 identified as African-American. I didn't want to have a
16 situation where maybe this voter is an African-American, I'll
17 throw them into this group. I wanted to be pretty sure because
18 I didn't want to be subject to the criticism that I conflated
19 the behavior of an actual African-American with a group of
20 whites that have similar-sounding names.

21 So in using the census tract data I worried a lot less
22 about those issues because I was using such a tight definition
23 of what I considered to be a likely African-American that I
24 didn't think that using a larger census geography would impact
25 that very much. And in some of the evaluation studies that

1 have been conducted using these methods, they do find it. The
2 extent to which one is primarily concerned about eliminating
3 false positives, meaning incorrectly calling someone an
4 African-American when they're not, that's what I was concerned
5 about. If your concern is about eliminating false positives,
6 the size of the census geography does not matter very much.

7 So I was quite comfortable using census tract data.
8 That was my intention all along. Mr. Bensen did provide block
9 coding so I could have done census blocks but I never had any
10 intention to and so the first thing I did when I got the data
11 set was to extract the census tract identifier from the census
12 block and I ignored it ever since.

13 Q. So Mr. Bensen provided you with the voter file and that
14 voter file was geocoded, I believe?

15 A. Geocoded, yes. That's the term.

16 Q. I'm sorry. Again, what does that mean, geocoded?

17 A. That means that a computer program was used that took
18 the address, the location of the voter and matched them to a
19 census block or a census tract. The geocode is the identifier
20 of that census location which then can be matched to census
21 data.

22 Q. And then you engaged in the racial-imputation
23 methodology?

24 A. That's correct. Yes. I did that myself.

25 Q. And are you aware of circumstances in which this

1 methodology has been used before?

2 A. Yes. I cite some of those instances in my report. It's
3 been used in political science to look at questions of voting
4 rights and disparities, racial disparities of voting behavior.
5 It's been used in the sociological and epidemiological
6 community to look at the differences in the incidents of
7 disease across races, et cetera. It's been used quite
8 substantially, I would say, over the past ten years.

9 Q. And is this methodology a generally accepted methodology
10 in the field of political science for reaching the conclusions
11 that you reached in this report?

12 A. I think it's generally acceptable. As a journal editor
13 I've had papers that used it submitted through the peer-review
14 process and did not uncover a lot of opposition to the use of
15 these procedures as part of that peer-review process.

16 Q. So we've gone through the process that you used, your
17 methodology. So let's move on to your actual analysis in this
18 case. If I can draw your attention to section 3 of your
19 report. What does section 3 address?

20 A. Section 3 is a broad examination of whether or not the
21 changes in the available dates for early in-person voting
22 changed rates of participation overall and for specific racial
23 groups.

24 Q. And what did you look at first when conducting this
25 analysis?

1 A. The first thing I looked at is just a simple comparison
2 of where the rate in which African-American voters used early
3 in-person voting changed from 2010 to 2014.

4 Q. What did you find?

5 A. I found that, based on my calculations, that 6.9 percent
6 of the people I identified as African-Americans and voted in
7 2010 did so by casting an early in-person vote. In 2014 that
8 rate was 7.1 percent. So there was a slight increase in the
9 percentage of African-Americans who took advantage of the
10 availability to vote early.

11 Q. Did you draw any conclusions from these numbers?

12 A. Not directly from those numbers. I would suggest that
13 those numbers make it a little bit hard to reconcile that the
14 contraction of the window for early in-person voting had an
15 impact on African-American use of early voting.

16 Q. The figure that we've just discussed deals with usage of
17 early in-person voting. Did you conduct any additional
18 analysis regarding individual-level voter behavior?

19 A. Yes. So that was simply just -- that first thing I
20 stated from my report was just the overall rates in which
21 African-Americans who chose to vote engaged in early voting.
22 But that's really not the essence of the analysis that I wanted
23 to do. What I really wanted to do was to look at -- compare
24 how people voted in 2010 with whether or how they voted in 2014
25 to see whether there was any direct evidence of an impact of

1 the changing availability of early in-person voting.

2 Q. Is this analysis that you just discussed illustrated
3 anywhere in your report?

4 A. Yes. It's table 1.

5 MS. COONTZ: If I could get table 1 on the screens.

6 BY MS. COONTZ:

7 Q. Looking at table 1, what does this table show?

8 A. So let me describe table 1. So table 1 is a comparison
9 of how people voted in 2010. There's four categories of voting
10 in 2010. There's those who did not vote for a variety of
11 reasons -- as I was saying, the four categories. Those who did
12 not vote in 2010 for a variety of reasons. Either they chose
13 not to vote or they were not of age or were not yet a resident
14 in 2010. That's possible. So think of it as a broad category
15 of people who just did not vote. Then those people who voted
16 on election day, those people who voted in 2010 by vote by
17 mail, and those people who voted early in person.

18 For each of those categories I'm able to compute their,
19 what we call, participation rate, what is the probability that
20 individuals in those categories voted in 2014. So what I find
21 is that for those who did not vote 2014, they tended not to
22 vote in 2014. They only voted in 11 percent rate,
23 11.5 percent.

24 Q. I'm sorry, was that people who did not vote in 2010 did
25 not vote in 2014?

1 A. Yes. That's what I said or meant to say. Again, this
2 shows that, not surprisingly, given 50 years of voting behavior
3 research, that people who don't vote tend to persist in that
4 behavior and they tend to not vote in subsequent elections.

5 Then I find that those who voted on election day in 2010
6 turned out at a rate of 60.4 percent; those who voted by mail
7 turned out at a rate of 68.6 percent; but, those who voted
8 early in person in 2010 returned to vote at the highest rate,
9 that of 76 percent.

10 Q. So did you draw any conclusions from these numbers?

11 A. The most obvious conclusion to this point is that it
12 does seem that early in-person voters are those people who were
13 the most likely to return to vote in 2014. It doesn't suggest
14 that people who were taking advantage of early voting are, in
15 some sense, low propensity or marginal voters who are voting
16 primarily because it was convenient in 2010 but no longer
17 convenient in 2014. Seems to suggest the opposite, that those
18 people who voted early, to make a bit of a joke, those who vote
19 early, vote often.

20 Q. You mention low-propensity voter. What's a
21 low-propensity voter?

22 A. A low propensity voter is a jargon for suggesting
23 someone who is very unlikely to vote. Doesn't mean that they
24 never vote but if they vote at all, it's probably going to be
25 in a national presidential election, but in other elections

1 they tend not to vote. Either -- there's a wide variety of
2 categories of low-propensity voters. Young voters tend to be
3 low-propensity voters. New residents in the state tend to be
4 low-propensity voters. Certain people, just by their
5 psychological nature, tend to be disengaged and are
6 low-propensity voters.

7 High-propensity voters are the opposite. Those are the
8 people who tend to persist in voting from election to election.
9 The fact that we see that the people who voted early in 2010,
10 75 -- more than 75 percent of them returned to vote in 2014
11 suggest to me that they're more likely to be high-propensity
12 voters than low-propensity voters.

13 Q. I believe you testified that low-propensity voters are
14 less likely to rely on the convenience of early in-person
15 voting; is that correct?

16 A. I haven't said that directly. It might be an inference,
17 one suggested by table 1 but it's not -- that's not a
18 definitive statement. It's just simply that I observed that
19 people who voted early in 2010 persist in voting into 2014 at
20 much higher rates than those people who did not vote early in
21 person. So only 6 out of 10 who voted on election day in 2010
22 returned to vote in 2014. Almost 8 out of 10 of those people
23 who voted early returned to vote in 2014.

24 Q. I apologize. I should have characterized that as an
25 inference. But then did you do anything in your analysis to

1 test that inference?

2 A. Yes. So the next stage of my analysis was to get more
3 direct at this question about whether or not convenience voting
4 primarily benefited low-propensity voters than those people who
5 were unlikely to vote absent the opportunity to vote early or
6 to vote absentee.

7 Q. Is this demonstrated in your report?

8 A. Yes. This it analysis is described in table 2.

9 Q. And can you walk us through what table 2 shows?

10 A. Sure. So obviously from the data I was provided, I
11 don't have clear data on who's a low-propensity and who's a
12 high-propensity voter so I had to use some proxies. So I used
13 two proxies for low-propensity voting which I think, given the
14 literature on voting, are eminently reasonable.

15 The first proxy was to look at -- and I should say, I
16 should add here this is analysis just of African-American
17 voters. So I limited my analysis precisely to whether or not
18 low-propensity African-American voters were the most likely to
19 use convenience voting which I think is closer to the issues
20 involved.

21 Q. Table 1, is that African-American voters only?

22 A. Table 1 is all voters.

23 Q. Okay. I apologize. I should have clarified that.

24 A. I should have as well.

25 Q. So with respect to table 2, can you walk us through what

1 this shows?

2 A. Sure. So the first group of proxies for low-propensity
3 voting that I used was whether or not they voted in 2010. So
4 as I had mentioned in my previous statement, the group of
5 voters in the voter file from 2014 who didn't vote in 2010 are
6 comprised of three groups of voters. Those who were registered
7 to vote and eligible to vote in 2010 and chose not to; those
8 who were not registered to vote, either because they weren't
9 registered or because they did not live in Ohio at that time;
10 and also voters who were not yet 18 years old.

11 Based on the literature in political science, all three
12 groups -- all three of those groups, and this is a composite,
13 all three of those were low-propensity voters. People who,
14 almost by definition of low propensity, people who have voted
15 in the past are more likely to be low-propensity voters. New
16 residents to a state, new registrants to a state, and young
17 voters are all low-propensity voters.

18 What I find in assessing low-propensity voters to all
19 black voters, I find that the low-propensity voters utilize
20 convenience voting at lower rates. So, for example, black
21 voters who did not vote in 2010, voted -- 5.4 percent of them
22 chose to vote early in person in 2014.

23 Q. When you say convenience voting, what do you mean by
24 convenience voting?

25 A. Convenience voting I'm combining both early in person

1 and absentee here. The finding holds for both types of voting.

2 So of those people who did not vote in 2010 but chose to
3 vote in 2014, among the low-propensity voters, 5.4 percent of
4 them voted early in person. Among all black voters, that rate
5 was 7.1 percent. Suggesting that for that group of
6 low-propensity voters, they used early in-person voting less
7 than the typical black voter.

8 They also used absentee voting at a lower rate than the
9 average black voter. Low-propensity black voters who voted in
10 2014 did so at a rate of 19.6 percent compared to 22.9 percent
11 for blacks overall.

12 And then of course the flip side of that is that
13 low-propensity voters who voted in 2014 were more likely to use
14 election-day voting than the typical African-American voter.

15 Just to see whether or not these results were robust or
16 whether they depended to precisely on my definition of
17 low-propensity voting, I did a parallel analysis simply based
18 on age of the voters -- their age as of January 2015. So I
19 looked and compared voters who were 30 years or younger in 2014
20 and compared their rates, how they voted in 2000 -- in the 2014
21 election. Among these younger black voters, only 5.6 percent
22 used early in-person voting compared to 7.1 percent of all
23 black voters. They voted absentee at a rate of 11.7, almost
24 half the rate at which the typical black voter voted absentee.
25 And over 83 percent of them chose to vote on election day.

1 So this suggests that convenience voting, whether it be
2 early in person or mail-in absentee appears to be utilized at
3 far higher rates by higher-propensity voters than it is used by
4 lower-propensity voters.

5 Q. Considering tables 1 and 2 together, are there any other
6 conclusions that you may be able to reach?

7 A. I think together they suggest that convenience voting is
8 primarily convenience to high-propensity, highly-energized
9 voters and it's not really something that's very effective at
10 drawing low propensity, low voters, new residents into the
11 political system.

12 Q. And did you do anything to test or any further analysis
13 to test this suggestion?

14 A. Yes. Another thing that I was able to do, given the
15 data that I had available, was I was able to compare the
16 participation of voters who, in 2010, voted on days that were
17 eliminated by the change in Ohio election law.

18 Q. Is this outlined in section 4 of your report?

19 A. Yes. This is in section 4 of my report.

20 Q. So how did you do this? What did you do?

21 A. Again, so based on the dates in which voters cast votes,
22 early votes in 2010, I'm able to divide voters into two
23 categories: Those who voted on what I'd called preserved
24 dates. Those are dates that are -- adjusting for -- you have
25 to adjust the dates because the math between date and day

1 changes from electoral calendar. But basically you're
2 comparing the calendars. I'm able to divide those into
3 preserved dates, those dates whose equivalent was available for
4 voting in 2014. And put other voters into what I consider
5 eliminated category, those people whose votes cast in 2010 were
6 on days in which their equivalents were not available for early
7 voting in 2014.

8 So I have two groups of voters. Those who voted on
9 preserved days, those that were probably less likely to have
10 been impacted by the changes because they were typically voting
11 later during the early-voting period during the week and those
12 people who were voting on eliminated days because they voted
13 primarily during golden week or one of the early weekends.

14 Q. Is this analysis illustrated anywhere in your report?

15 A. Yes. This analysis is demonstrated in both tables 3 and
16 4.

17 Q. You mentioned that you were able to determine which day
18 people voted. How did you know?

19 A. That was reported by -- in the data from the county
20 clerks that was compiled by Mr. Bensen and attached to the
21 file.

22 Q. So can you walk us through what table 3 shows?

23 A. So table 3 considers the difference between those who
24 voted in 2010 on an eliminated day, golden week, early weekend,
25 with the people who voted on a preserved day, basically later

1 in the period, middle of the week. And I do the comparison for
2 two groups. One is just all the voters. Everyone who voted
3 early in 2010. And then I also do it for those that I estimate
4 to be African-American.

5 What I find is that for all voters overall there's
6 essentially no difference between the eliminated group and the
7 preserved group, suggesting that those people who voted on an
8 eliminated day were no less likely to vote in 2014 than someone
9 who had voted on a preserved day. Suggesting that the denial
10 of the earliest voting opportunities had no ultimate impact on
11 whether or not they voted in the 2014 election.

12 I also do that specifically for black voters and then I
13 find that those who voted on the eliminated days actually
14 turned out and voted in the 2014 at a higher rate than those
15 who voted in the preserved days, which is the opposite of what
16 we would expect if the elimination days had had a
17 disproportionate effect on the ability of those individuals to
18 vote. In fact, the rate at which the eliminated
19 African-American voters vote in 2014 is statistically
20 significantly higher than the rate at which those people who
21 voted on the preserved days voted.

22 I would add, this is also, I think, evidence that those
23 people who voted the earliest in 2010 probably reflects the
24 most engaged, the most active, the most interested voters, not
25 necessarily people that for which the early-voting days were

1 crucial in their ability to participate in the election.

2 Q. Those are those high-propensity voters that you
3 testified to?

4 A. Yes. My guess, based on these data and the previous
5 results that I discussed, is that those African-Americans who
6 voted during golden week and during the early weekends are the
7 most high propensity African-American voters.

8 Q. In these columns you have N equals under each
9 percentage. I'm going to draw your attention to the black EIP
10 voters in the eliminated group. What does this n=1260 mean?

11 A. That reflects the number of African-American voters that
12 I estimated used an eliminated day in 2010.

13 Q. For the whole state of Ohio?

14 A. For the whole state of Ohio. I should be clear,
15 however, that, again, I took a very conservative definition of
16 identifying people as African-American. So the actual number
17 could be higher. But I would also note that the number overall
18 for which the racial imputation plays no role was only 16,000
19 for the entire state of Ohio.

20 Q. After conducting the analysis in table 3, did this raise
21 any additional questions for you?

22 A. Sure. It also suggests -- so table 3 suggests that
23 those people voting on eliminated days found some way to get to
24 the polls. But I think it's important to know how they
25 participated in 2014.

1 Q. The method by which they vote?

2 A. The method by which they participated because, as argued
3 by Professor Yang, there's the possibility that while the
4 curtailing of the availability of early voting might not affect
5 participation rates overall, it might force voters to cast
6 votes on election days which then might link them to voting
7 queues and therefore, make voting more unattractive. So I
8 thought it was important to determine whether or not, in fact,
9 we could find such an effect.

10 So what I did in table 4 is I broke down the two groups,
11 the preserved and eliminated groups, and I looked at how they
12 participated in the 2014 election. I should add that this
13 includes the voters of all races. So none of this depends on
14 the racial imputation.

15 Q. Does that matter in the analysis?

16 A. I don't believe so. I think I found very similar
17 results if I did break out by race. But as was noted
18 previously, I only have 1260 African-American eliminated voters
19 and so dividing them into four subcategories meant that the
20 estimates would be less precise.

21 Q. So let's talk about table 4. What does this tell us?

22 A. So table 4, again, is a comparison of preserved versus
23 eliminated voters with respect to whether they voted at all in
24 2014, whether they voted early in person, whether they voted
25 absentee or whether they voted on election day. So in

1 particular, and this is consistent with table 3. In fact, it's
2 implied by table 3, whether or not you voted on a preserved day
3 or eliminated day is not related to whether you voted or didn't
4 vote in 2014. So that's something that's already been
5 established.

6 What's most important is the question of whether or not
7 people who voted on eliminated days were, in some sense, forced
8 into voting on election day. That's not what I find. So, for
9 example, those who voted on eliminated days in 2010, 37 percent
10 of them voted early in person in 2014 but only 29.2 percent of
11 those who voted on a preserved day in 2010 chose early voting
12 in 2014.

13 We find a similar difference with respect to absentee
14 voting. Those people who voted on eliminated days did vote
15 absentee at slightly higher rates than those people who voted
16 on preserved days. But what we don't find evidence for is the
17 contention that people who voted on eliminated days would end
18 up finding their way into voting queues on election day.
19 They're much less likely -- those who voted on eliminated days
20 are much less likely to vote on election day than those people
21 who voted on the preserved days in 2010.

22 Q. So broadly speaking, what does this table say about 2014
23 voters who had previously voted on an eliminated day in 2010?

24 A. They typically found ways to vote early, whether it's
25 voting early in person or by absentee.

1 Q. How do the analysis in tables 3 and 4 differ from using
2 an analysis -- from conducting an analysis using aggregate
3 data?

4 A. These analyses could not be conducted under aggregate
5 data because, since we don't know the identities of the
6 individuals within the aggregates, we don't know whether
7 changes in the aggregate rates of voting across two elections
8 are attributable to individual-level change or due to
9 compositional differences or whether they're due to any number
10 of other factors. So these types of analyses depend on the
11 availability of individual-level data.

12 Q. So, Professor McCarty, were you able to draw any
13 conclusions with respect to the impact of the changes in Ohio
14 law on voters from 2010 and 2014, voters as a whole and voters
15 by race?

16 A. So the conclusions that I believe are merited here is
17 that, overall, the specifics in the changes between 2010 and
18 2014 did not impact participation overall. Those people who
19 voted on the days that were directly affected by the changes
20 voted at the exact same rate as those people whose voting
21 choice in 2010 would not have been affected by those changes.

22 Among African-Americans we actually find the
23 counterintuitive finding that having voted on an eliminated day
24 is associated with higher participation in the 2014 election.
25 Again, I don't think that change in election laws caused that

1 increase but I do think it's associated with the idea that
2 those African-Americans who use early voting tend to be highly
3 engaged and persistent voters and therefore, they were not
4 impacted substantially by the changes in Ohio law.

5 Q. I'm going to draw your attention to the only section of
6 your report we haven't covered thus far and that's section 5.
7 What does section 5 of your report look at?

8 A. Section 5 is a very kind of a quick analysis of a claim
9 that African-Americans would be unlikely to respond to changes
10 in early voting by voting absentee, primarily because they were
11 wary of the mail and were not typically absentee voters. So
12 what I report in section 5 is a simple comparison of the rates
13 at which African-American voters vote by mail with the rates by
14 which non-African-American voters vote by mail. And the two
15 rates are essentially identical. 22.9 percent for
16 African-Americans and 22.8 percent for non-African-Americans.

17 Q. We're going to wrap up your testimony, my direct at this
18 point. I just want to run through some of the conclusions that
19 are outlined in your conclusion section of your report.

20 Dr. McCarty, what, if any, conclusions did you reach
21 regarding the 2004 decline in -- excuse me, the 2014 early
22 in-person voting laws?

23 A. I found that the percentage of Ohioans who used early
24 in-person voting did decline but it's almost completely
25 attributable to the overall decline in participation in the

1 state. In fact, the rates at which people who actually voted,
2 voted early, were essentially identical and slightly higher for
3 African-Americans.

4 Q. And we've talked a lot about high-propensity voters.
5 Did you reach any conclusions with respect to whether
6 African-American voters are more likely to be high-propensity
7 or low-propensity voters?

8 A. I did not do a direct analysis whether, on average,
9 African-Americans are higher or lower propensity than white
10 voters. My analysis was really among the African-American
11 community there was some high-propensity voters and there's
12 some low-propensity voters. And I asked the question, did the
13 laws disproportionately affect those low-propensity voters, and
14 I found almost no evidence for that to be the case.

15 MS. COONTZ: If I can have just one minute, Your
16 Honor.

17 BY MS. COONTZ:

18 Q. One final question. Professor McCarty, the opinions
19 that you expressed today, are they to a reasonable degree of
20 professional certainty?

21 A. Yes. I think so.

22 Q. And the methodology that you employed to reach these
23 conclusions, is the methodology generally accepted in your
24 field of study?

25 A. Yes. I believe so. It's been well published and highly

1 used.

2 MS. COONTZ: Thank you. I have no further questions
3 at this time.

4 THE COURT: Very well.

5 Mr. Kaul, we will go to lunch first and then we will do
6 your cross when we return at 1:30.

7 Professor, if you'd step down. Have a nice lunch.
8 We'll see you at 1:30.

9 (A recess was taken at 12:03 p.m.)

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1 Thursday Afternoon Session,
2 November 19, 2015.
3 1:30 p.m.

4 - - -

5 THE COURT: Mr. Kaul, you may cross.

6 MR. KAUL: Thank you, Your Honor.

7 - - -

8 CROSS-EXAMINATION

9 BY MR. KAUL:

10 Q. Good afternoon, Dr. McCarty.

11 A. Hi. How are you?

12 Q. My name is Josh Kaul. I'm an attorney for the
13 plaintiffs in this case. I'd like to start out by going over
14 what you did conclude and what you didn't conclude in your
15 report. Okay?

16 A. Okay.

17 Q. So first, your conclusions were focused on early
18 in-person voting usage, right?

19 A. Primarily. Although I also looked at absentee by-mail
20 voting.

21 Q. And your conclusions apply just to midterm elections,
22 correct?

23 A. The elections that I analyzed were midterm elections.
24 So they certainly held for midterm elections. I think there
25 are arguments to be made to which they could be generalized to

1 other types of elections.

2 Q. But you wouldn't generalize those conclusions to
3 presidential elections, would you?

4 A. I think there's a strong case for doing so.

5 Q. You did not address the use of same day -- the impact of
6 the same-day registration element of golden week upon turnout;
7 is that right?

8 A. No, I did not.

9 Q. And in your work you found a statistically significant
10 disproportionate usage of early in-person voting by
11 African-American voters as compared to white voters, correct?

12 A. I'm sorry. Could you repeat?

13 Q. Yeah. You found that African-American voters were more
14 likely to use early in-person voting in 2010 and 2014 than
15 white voters in Ohio by a statistically significant margin,
16 correct?

17 A. A couple of things. I do recall, it's not reported in
18 the report but the rate at which African-Americans utilized
19 early in-person voting was slightly higher than the white rate.
20 The statistical significance part is an artifact of the fact
21 that we're talking about millions of voters and almost any
22 difference would be statistically significant. So I would say
23 there was a difference. I would not say it was a large
24 difference. And I would not say that it's one for which there
25 are plausible alternative explanations that could explain.

1 Q. Okay. So but to be clear, it is a statistically
2 significant difference, right?

3 A. Yes. Because all differences with sample sizes that
4 large would be statistically significant.

5 Q. There is a scholarly consensus that same-day
6 registration increases turnout, correct?

7 A. I've seen papers showing a correlation between same-day
8 registration and turnout when the same-day registration is
9 approximate to the elections.

10 Q. So is that a yes?

11 A. I said I know of one paper that reaches that conclusion,
12 yes.

13 Q. You addressed the literature on same-day registration in
14 your rebuttal report in the NAACP case, correct?

15 A. That's correct, yes.

16 Q. And you actually listed multiple studies in that report
17 that address the effect of same-day registration on turnout,
18 correct?

19 A. I don't recall. There was one that got more focus than
20 the others.

21 Q. Are you aware of any contrary scholarship on that issue?

22 A. No.

23 Q. I'd like to ask you a little bit about your experience
24 doing the type of analysis that you did for this case. Aside
25 from the work that you've done in this case and the NAACP case,

1 have you ever done work analyzing different rates of reliance
2 on early voting by different racial groups?

3 A. No, I have not.

4 Q. Aside from the work you've done in this case and the
5 NAACP case, have you ever done any work analyzing any aspect of
6 early voting?

7 A. No, I have not.

8 Q. Again, aside from the work you've done, you mentioned, I
9 guess, in the NAACP case, have you ever analyzed same-day
10 registration?

11 A. I have not analyzed same-day registration. Even in that
12 case I reviewed the papers that purported to have such a
13 connection.

14 Q. Are you familiar with political-science literature on
15 early voting?

16 A. Yes, I am.

17 Q. Are you aware of political-science literature on the
18 costs of voting?

19 A. Yes. I -- typically, political scientists believe that
20 voting is at least a rational activity that takes place when a
21 voter derives greater benefits from voting than other costs.

22 Q. And that's a well-established political science?

23 A. That's a framework for studying the question. It's an
24 empirical question as to what is a cost or what sort of things
25 increase or decrease the cost of voting.

1 Q. And do you agree that that's an appropriate framework to
2 analyzing voting -- the impact of laws on voting decisions?

3 A. I don't disagree with the overall framework.

4 Q. And do you know whether political-science scholarship
5 has found that increasing costs of voting disproportionately
6 affects minority voters?

7 A. Again, the cost of voting is a very broad category and
8 obviously if you can discern that something is actually a cost
9 or an impediment to voting, yes, I would say that the
10 political-science literature might show that it would
11 disproportionately affect African-American or poor voters. Of
12 course the question is what sorts of election procedures
13 materially affect the cost of voting and which ones don't.

14 Q. I'd like to just ask briefly about your process for the
15 report in this case. Is this report largely derived from the
16 work that you did in the NAACP case?

17 A. The original data collection and then my initial work
18 was done in preparation for the NAACP case which then was
19 settled and concluded. I didn't begin working on it again
20 until I was engaged in this case.

21 Q. And as of the time of your deposition in this case, you
22 only spent about 15 hours working on this case; is that right?

23 A. Specifically to this case, yes.

24 Q. And that includes the drafting of an approximately
25 20-page expert report?

1 A. That sounds about right, yeah.

2 Q. And you've been an expert witness in some other cases
3 before, right?

4 A. Yes.

5 Q. And that includes two redistricting cases in Florida?

6 A. Yes.

7 Q. And the NAACP case you mentioned?

8 A. Yes.

9 Q. And now this case, right?

10 A. Yes.

11 Q. Any others?

12 A. No.

13 Q. And in each of those cases you were an expert on behalf
14 of a state, correct?

15 A. That's correct.

16 Q. Each of those cases -- I'm sorry.

17 A. Specifically in Florida in one case the state assembly
18 and in one case the state senate.

19 Q. And in each of those cases, the allegation that the
20 plaintiffs in those cases had made was that the challenged
21 provisions violated either a state or federal constitution or
22 the Voting Rights Act, right?

23 A. In the Florida cases there was a claim that the maps
24 that had been drawn by the state legislature violated the
25 Florida constitution. And in the NAACP case, the challenge was

1 related to the Voting Rights Act, as I understand it.

2 Q. And in those two Florida cases, the courts found that
3 there was a constitutional violation, correct?

4 A. The state senate case basically I don't think the courts
5 reached a decision but I think the defendants withdrew. But in
6 the congressional districting case, the courts originally found
7 that, yes, that the maps didn't comply with the Florida
8 constitution.

9 Q. And the defendants withdrew, meaning that they agreed to
10 do a new map, right?

11 A. That's right, yes.

12 Q. When did you receive the data that you used for your
13 expert report in this case?

14 A. I believe that I received the final set of data sometime
15 in April.

16 Q. And when did you begin receiving the data?

17 A. So part of the process, some early data was sent to me.
18 The easiest obtainable data was sent to me so I could begin
19 preparing and planning for doing -- doing the analysis and I
20 believe that was in March. So the kind of final data set, the
21 one that I then used, came to me late April, early March.

22 Q. You had that for about seven months?

23 A. Yeah. Yes, I have.

24 Q. And do you know when the data was first provided to the
25 plaintiffs in this case?

1 A. I believe that the data was provided when I did my
2 submission which would have been, you know, in August, I guess.
3 So whenever it was.

4 Q. You mean your expert report in this case?

5 A. Yeah, my expert report. After submitting my expert
6 report, I provided the computer coding, the data that I used to
7 do it, and that's my only knowledge of the plaintiffs receiving
8 the data.

9 Q. Your expert report is actually dated October 15, 2015.

10 A. I'm sorry, yeah. It's been a long couple months.

11 Q. So you've been up there for a while. I understand.

12 So the data was sent after that?

13 A. Yeah. Shortly after, I believe, a couple days.

14 Q. And do you regard that as significant data in this case?

15 MS. COONTZ: Objection.

16 THE COURT: I suppose it really is significant if I
17 determine it's significant. But you can answer.

18 THE WITNESS: What do you mean by significant? Is it
19 important?

20 BY MR. KAUL:

21 Q. Important.

22 A. I would think so. Otherwise I wouldn't have filed the
23 report based on it.

24 Q. Now, the data that you used was obtained with the
25 assistance of the Attorney General's Office, the Secretary of

1 State's office and vendors called Triad Governmental Systems of
2 Xenia, Ohio and Skyline Consulting of Albany, New York; is that
3 right?

4 A. I'm not sure I would character -- I would not
5 necessarily characterize it that way as I understand it. My
6 understanding is that the Attorney General's Office contracted
7 with Clark Bensen to acquire the data and then he acquired it
8 and sent it directly to me. So I'm not sure what assistance
9 the Attorney General's Office played beyond contracting with
10 Mr. Bensen.

11 Q. In his declaration is part of your -- it's attached to
12 your expert report, right?

13 A. I've seen it and I believe it was submitted in this
14 case, yeah.

15 Q. And he refers, at least, to using those vendors I just
16 mentioned, right?

17 A. That's correct. That's correct. I'm just questioning
18 the characterization of the role of the Attorney General's
19 Office. He did use those vendors.

20 Q. The declaration speaks for itself?

21 A. Yeah. I believe so, yes.

22 Q. Now, you've never worked with Triad before, have you?

23 A. No, I have not.

24 Q. And you've never worked with Skyline before, right?

25 A. No, I have not.

1 Q. And Skyline also geocoded your data; is that right?

2 A. I believe that Mr. Bensen geocoded the data, perhaps
3 using the software provided by that vendor, as I recall.

4 Q. Okay. Is that called Maptitude software?

5 A. I believe so, yeah.

6 Q. And you don't know what Maptitude software is?

7 A. I have some basic understanding of what software of its
8 type does but I don't have any particular knowledge of that
9 particular software.

10 Q. You're not an expert in geocoding?

11 A. No, I am not.

12 Q. That was the basis of all the data that you used in this
13 case; is that right?

14 A. That's correct. Yes.

15 Q. You also used the 2015 voter file, you said?

16 A. Yes. The data -- list of voters as of January 2015.

17 Q. So if an individual voted in 2012 or 2010 and then left
18 the state of Ohio and his voter record was deleted from the
19 voter file before 2015, is that individual included in your
20 results for 2010?

21 A. I didn't do any analysis based just solely on 2010.
22 That person would not be in the analysis for the analysis of
23 2014. Therefore, it would be a voter who voted in 2010 who
24 wasn't there when I did the analysis of 2014. So but there's
25 no stand-alone analyses just of 2010. They would not have been

1 there.

2 Q. But there are comparisons of 2010 to 2014, right?

3 A. For the individuals who appear twice, appear in both
4 elections. Essentially the analysis is a comparison of
5 people's behavior in 2010 and 2014 of those people who appear
6 in the voter file of 2015.

7 Q. But you have results for overall turnout for those
8 years, right?

9 A. Yes, I do. I do have some, yes. I do present some
10 numbers for turnout early voting rates for 2010. As I
11 described in the report, because of this problem of attrition,
12 I reweight the data by county so that it matches up to
13 officially-reported numbers by the state so as to kind of deal
14 with the problem that you suggested, which is that some people
15 voted in 2010 and left. So I adjust -- I reweight the data by
16 county in order to adjust for that and doing aggregate
17 analysis.

18 Q. So just so we're clear. So anybody who was -- who voted
19 in 2010 who no longer -- who was no longer in the voter files
20 of 2015, they're not included in your 2010 versus 2014
21 comparisons?

22 A. Not directly. I know from official election results I
23 essentially know approximately, by county, how many people
24 voted in 2010 and do not appear in my file. So I'm able to do
25 some statistical adjustments to account for that effect when I

1 report the aggregates.

2 Q. But you don't know, for instance, what the race of those
3 people is?

4 A. No. No, I don't.

5 Q. And you're comparing racial turnout in 2010 and 2014,
6 right?

7 A. That is correct. But I'm weighting -- I'm reweighting
8 the data by counties so that I'm assuming that if the county
9 had a large number of voters attrit then I would just more
10 heavily weight those data that I continue to observe by race.

11 Q. So you're treating everybody in a county -- you're
12 treating the people who left the county as though they reflect
13 that proportion -- that that group makes up in a county?

14 A. More or less, yes.

15 Q. And isn't that the same thing that you're criticizing
16 Dr. Timberlake for doing?

17 A. I don't see that connection at all.

18 Q. You're criticizing him for taking county-level data and
19 drawing individual conclusions, correct?

20 A. I mean, there's a very large difference between looking
21 at a pattern of behavior in voting at a county and drawing an
22 inference about individuals for doing it than there is from
23 reweighting the data because you know some of it's missing. So
24 what I did is several steps away from the inferences that I
25 draw in this case. Whereas his use of aggregate data at the

1 county level was central to the claims that he's making.

2 Q. Do you know how the African-American mobility rate
3 compares with that -- residential mobility rate compares with
4 that of white voters?

5 A. I do not.

6 Q. So if the African-American rate were higher, you would
7 be undercounting African-American turnout in 2010, right?

8 A. If it were higher, yes, possibly.

9 Q. Now, if an individual voted in 2014 and he or she was
10 removed from the data set prior to when you obtained the 2015
11 data, that individual also would not be included in the data,
12 correct?

13 A. That's correct. And I also made some adjustments for
14 that for 2014. But of course they're much smaller because
15 there are fewer people for which that's true.

16 Q. You agree that if no weighting were done, those types of
17 changes could skew your results, right?

18 A. Actually I disagree because I did the analysis both
19 ways, with weighting and without weighting, and they didn't
20 make much of a difference at all.

21 Q. But that's assuming that the weighting is correct,
22 right?

23 A. The statement I just made doesn't assume whether it's
24 correct or not. You asked me whether the weighting would --
25 weighting or not weighting would change results and I said it

1 does not. Now, perhaps if there's some very disparate patterns
2 in the mobility then perhaps the weighting doesn't account for
3 those changes and the actual results could be somewhat
4 different. But I'm unaware of discrepancies large enough to
5 kind of lead to those differences.

6 Q. The data that you used also includes a number of voters
7 who registered after the 2010 election, correct?

8 A. Presumably, yes.

9 Q. And how are those voters treated in 2010, in your
10 analysis of 2010?

11 A. Yes. The extent to which they're used, they would be
12 counted as nonvoters in 2010.

13 Q. So that would also suggest that your numbers are driving
14 down the 2010 turnout rate, correct?

15 A. Well, so -- let me be careful in answering this. So the
16 fact that there are people who were not registered in 2010 but
17 appear in my file -- yes. Yes. The answer is correct.

18 Q. Because they're treated as though they had been
19 registered voters in 2010, right?

20 A. Yes. They'd be treated as registered voters.

21 Q. Do you know how many people turned 18 between 2010 and
22 2015?

23 A. I don't know that number.

24 Q. Do you know if it's over a million?

25 A. I don't know for sure. It's not implausible.

1 Q. And that could also skew your results, correct?

2 A. It can skew one specific result. It could skew the
3 results about the aggregate rates of voting in 2010. It would
4 not necessarily skew the results about the comparisons between
5 behavior in 2010 and 2014.

6 Q. But it would affect the 2010 numbers, right?

7 A. The aggregate numbers -- aggregate rates of the people
8 who voted divided by population, yes. But it would not affect
9 the rate relative to registrants because they weren't
10 registered in 2010 under your scenario.

11 Q. But you're treating them in your analysis as though they
12 were registered, right?

13 A. Yes. I guess that's right, yes.

14 Q. So it would affect it?

15 A. It would affect the rate.

16 Q. And do you know if African-American voters are
17 disproportionately young?

18 A. Perhaps. That's possibly true.

19 Q. So if they are, that would artificially reduce the 2010
20 turnout rate because of the reasons we just mentioned, right?

21 A. Yes. Just with the rate, yes.

22 Q. Because a disproportionate number of African-Americans
23 would have turned 18 since 2010 and would be treated in your
24 data as though they were registered voters who didn't vote in
25 2010?

1 A. That's possible. I don't know what the difference is
2 between those rates. I wouldn't know how big those differences
3 would be but it's plausible.

4 Q. Do you know how many people registered to vote in the
5 lead-up to the 2012 election?

6 A. I don't know.

7 Q. All of those people would be treated as though they were
8 registered voters in 2010 who didn't vote, right?

9 A. That's correct, yes.

10 Q. Your turnout statistics are relative to the number of
11 registered voters, right?

12 A. Yeah. The rate -- the voting rates are relative to
13 registered voters.

14 Q. Let me ask you about the -- I think you used the phrase,
15 imputation of race to voters in the file?

16 A. Yes.

17 Q. If I call that race coding, does that make sense to you?

18 A. If I understand that's what you mean.

19 Q. Is that another term used for that process?

20 A. Possibly, yeah. Yeah. It's accurate.

21 Q. I want to talk about what your process was for race
22 coding individuals for your analysis. Just to be clear, you
23 coded individuals' race based on their surname and the
24 likelihood that someone of a given race would live in the
25 census tract where they lived, right?

1 A. That's correct, yes.

2 Q. And this is the first time you've race coded voter
3 files, right?

4 A. Yes. That I've done it personally, yes.

5 Q. How much of the work for your determinations, your
6 determinations about a person's race, was done by their surname
7 versus the census tract information?

8 A. I'm not aware of computing a particular metric on that
9 so I don't know. I don't know how it parses out.

10 Q. Could we take an example?

11 A. Sure.

12 Q. Let's take the name Jackson.

13 A. Okay.

14 Q. The surname Jackson.

15 A. Okay.

16 Q. And assume that 53 percent of Jacksons are black and
17 47 percent are white.

18 A. Sure.

19 Q. How do you use -- can you explain to us how you use the
20 geographical component of your analysis to determine when an
21 individual of Jackson is coded as white versus coded as black?

22 A. Sure. So if a person named Jackson lived in a census
23 tract that was heavily African-American or is highly likely
24 that an African-American lived in that census tract that
25 Mr. Jackson lived in, that would raise the probability in my

1 assessment that Mr. Jackson was an African-American. If he
2 lived in a census tract for which it's likely that a white
3 voter lived in that census tract, that would reduce the
4 estimate of my probability that Mr. Jackson was an
5 African-American.

6 Q. So what if Mr. Jackson lived in, say, a 60 percent
7 census tract?

8 A. Again --

9 Q. 60 percent black census tract?

10 A. It doesn't match directly to the percentage black in the
11 census tract. The calculation is based on the probability that
12 an African-American lives in Mr. Jackson's census tract. So
13 there's subtle differences which means that it doesn't directly
14 connect to the percent race. So without more information I
15 couldn't exactly answer that question.

16 Q. Let me frame it the way you just described it. So say
17 Mr. Jackson lives in a census tract in which a person who lives
18 there, there's a 60 percent chance that they'd be black, how
19 would we code Mr. Jackson?

20 A. Again, I can't do the exact calculation but if the
21 question were asked that in a census tract that was not very
22 informative about Mr. Jackson's race then I would assume that
23 it's a 53 percent chance that Mr. Jackson was an
24 African-American.

25 Q. And what do you consider not very informative?

1 A. Well, sufficiently racially diverse such that we
2 don't -- it's just as likely that an African-American lives in
3 that census tract as it is that a non-African-American lives in
4 that census tract.

5 Q. What if it's 60 percent African-American, a
6 likelihood --

7 A. At 60 percent African-American, I believe the
8 demographics of Ohio would suggest that a large -- it's very
9 likely that given that you live in that census tract that
10 you're an African-American and therefore, it would raise the
11 probability that I would assign to Mr. Jackson being
12 African-American. I can't tell you, without doing the math,
13 exactly how high, but it would be higher than 53 percent.

14 Q. Did you check the accuracy of your results?

15 A. Obviously one can't check the accuracy of these results
16 because to do so would mean that you would have individual data
17 on races and if I had individual data on each person's race, I
18 wouldn't have had to do the imputation. What I did do instead
19 was I reran the analysis using several cutoffs for the level at
20 which I would consider someone to be an African-American. So
21 in one analysis I would assume that anyone who had at least a
22 50 percent chance at being African-American was coded as an
23 African-American.

24 I redid the analysis assuming that anyone with a more
25 than 60 percent chance of being African-American was coded as

1 an African-American. And I do this for each level of ten
2 percent all the way up through 90 percent. And the basic
3 results didn't change. And that to me suggested that both the
4 procedure was probably reliable and to the extent to which
5 there was errors in the procedure, they weren't significant in
6 terms of determining the implications of the analysis.

7 Q. When you say the results were the same, what do you mean
8 by that?

9 A. Essentially the same patterns would be observed, the
10 same percentage of people who voted early in 2010,
11 African-Americans who voted in 2010 would vote in 2014. So
12 none of the tables would the numbers kind of materially change
13 as I adjusted this threshold.

14 Q. If there was some sort of systematic error in the way
15 you did the race coding you'd expect to see that sort of
16 result, right?

17 A. A systematic error that's true of everything? I don't
18 believe so. If I go to the 53 -- if I go to the 50 percent
19 threshold, the first one I described, then Mr. Jackson is --
20 every Jackson in kind of a racially-mixed area is going to be
21 considered -- is going to be considered to be an
22 African-American. So I'm going to have a very large inclusive
23 set of African-Americans. But it's going to be nothing really
24 has changed from imputation, imputation not doing anything to
25 change that assessment.

1 As you -- as I move up the threshold, the imputation is
2 doing more and more work and is more and more relevant to the
3 results yet it doesn't change. So I think varying the
4 thresholds and not finding very different results suggests that
5 the imputation procedure was probably both accurate and perhaps
6 the results are just not very sensitive to how it was done.

7 Q. I promise I'll talk about this more in detail in a
8 minute. If, for example, using census tracts was itself an
9 error, that same error -- that error would have the same effect
10 throughout those ranges, right?

11 A. Not necessarily. The precision of the race data that
12 might vary between using census blocks and census tracts is
13 going to matter a lot more as I move that threshold from .5 to
14 .9, and it didn't. So that particular issue would be very --
15 would be sensibly detected by my redoing the analysis in four
16 or five different ways using the four or five different
17 thresholds.

18 Q. I'll come back to the census tracts. Did you do any
19 individual-level checking of your results?

20 A. As I just suggested, it would be impossible to do
21 individual-level checking because if I knew the race of the
22 voters, I wouldn't be doing the imputation in the first place.

23 Q. You know the race of some voters, right?

24 A. I don't know very many people in Ohio so I don't know.
25 I know what you mean do I know the race of some of the voters.

1 Q. You could have taken, for example, a list of the members
2 of the Ohio State football team and compared that to your
3 results and seen how accurate they were, right?

4 A. Sure. Sure. Plausibly. I did not do that.

5 Q. Or the members of the legislature?

6 A. Sure. I could have done that. I did not.

7 Q. Did you test your method on a data set from another
8 state where racial identities are included in the voter file?

9 A. I did not do that. I cited some work by colleagues that
10 had done that for the state of Florida.

11 Q. Did you do an aggregate check to see if your numbers
12 checked up with the overall demographic numbers for the
13 registered voting population in Ohio?

14 A. I did not. I did not directly, again, because we don't
15 know directly the percent of African-Americans among registered
16 voters except through the, I guess through the census survey
17 that year. But, again, I didn't do that. I did correlate the
18 percent African-American in my data of registered voters to the
19 percent African-American in the county and I found -- they're
20 not going to be the same, obviously, but the correlation
21 between those two numbers was quite high. So I did do that
22 check but I did not -- what I really want to do, to do kind of
23 a thorough check on registration rates would be to have
24 registration rates by race by county and crosscheck that way.
25 And my understanding is that that's not available.

1 I will add that, again, because I chose to present
2 results from fairly conservative assessment of who is an
3 African-American that I was well aware that the number of
4 African-Americans that I coded was smaller than the percentage
5 of African-Americans in the voting-age population. But, again,
6 what I wanted to do was to have a sample of African-American
7 voters where I could be extremely confident, reasonably
8 confident that they actually were African-American so I wasn't
9 conflating effects of African-Americans and
10 non-African-Americans.

11 So, yes, the numbers were slightly smaller because I
12 wanted to be conservative. If I used the .5 threshold then the
13 numbers would have been much closer to the aggregate numbers
14 that I could check.

15 Q. And census data indicates that there are approximately
16 700,000 registered African-American voters in Ohio, right?

17 A. I believe that's about right, yeah.

18 Q. And you would not be surprised if your results indicated
19 that the number -- your results -- that the results you
20 received indicated that there were more than 100,000 fewer
21 African-Americans than that, right?

22 A. Using the threshold of .7 there would be approximately
23 100,000 fewer. If I chose the threshold of .6, that gap would
24 be considerably smaller. And if I chose a gap of -- if I chose
25 of cutoff of .5, smaller still. Again, that's just an

1 assessment of how conservative I was in assigning
2 African-American coding to an individual voter.

3 Q. But leaving even 100,000 African-Americans out of a
4 sample of 700,000 means that you're excluding approximately
5 14 percent of the African-Americans in the sample?

6 A. I guess that math is right, yeah.

7 Q. And that large of a difference can bias your results,
8 right?

9 A. Again, I don't believe so because that gap would be
10 considerably smaller when I did the analysis using the cutoff
11 of .8 or .9 and none of the results changed. So if your
12 concern is that the gap between the number that I code and the
13 actual number is a source of bias, I find analyses that reduce
14 that gap and the results do not change in any kind of
15 systematic way, very small changes.

16 Q. Which results are you talking about that didn't change?

17 A. I do not recall that any of the tables that I report in
18 the paper are materially affected by whether I chose the .7
19 cutoff or .9 cutoff.

20 Q. What does materially affected mean?

21 A. Meaning that generally I think that most of the changes
22 were -- we're talking about percentages. So the first
23 decimal -- so we're talking about the first decimal point of
24 percentages. So instead of 22.1, 22.2, maybe in some cases
25 22.1 becomes 22.3. But I don't remember anything bigger than

1 that.

2 Q. Okay. The difference between African-American turnout
3 in 2010 and 2014 that you found is .2, right?

4 A. That is correct, yeah. But I don't -- no, using a
5 different cutoff with imputation would change both numbers. So
6 whether or not the gap was bigger or smaller as I changed the
7 threshold, something I just don't remember.

8 Q. But you don't know how that affected the result?

9 A. It did not -- I do not believe it changed the fact that
10 the rate of usage of early voting among African-Americans in
11 2014 was higher than it was in 2010. And I don't believe it
12 affected the difference between those two rates.

13 Q. And those numbers, again, include the issues we
14 discussed with the 2010 data from before?

15 A. Yeah. Yeah.

16 Q. And the reweighting of the data?

17 A. Yeah. Exactly.

18 Q. And the registrants from 2012?

19 A. Sure.

20 Q. Let's talk about the accuracy of using surnames to
21 identify African-Americans.

22 A. Sure.

23 Q. First of all, you relied on a working paper by two of
24 your colleagues in developing the methodology that you used
25 here, right?

1 A. I relied in the sense that I used their findings about
2 the reliability of the surname imputation to be good and
3 approximate. I did not use the exact methodology that they
4 used. They had a much more extensive methodology that was not
5 appropriate for this particular case.

6 Q. And one of their findings was that using surnames alone
7 misses about 84 percent of African-Americans, right?

8 A. That sounds about right.

9 Q. So just using surnames you're only going to identify
10 16 percent of African-Americans?

11 A. That's true. And in the state of Florida, I think
12 especially, where whites and African-Americans often for
13 historical reasons share surnames at a very high rate.

14 Q. Florida also has a much higher Hispanic or Latino
15 population than Ohio, right?

16 A. That's true, yes.

17 Q. And those are -- Latino names are the most easily
18 identified, right?

19 A. True.

20 Q. But so is it fair to say that if only 16 percent of
21 African-Americans are identify by surname, it's the census
22 geography that's doing most of the work in identifying
23 African-Americans?

24 A. Certainly that would be the case in Florida, given their
25 data, yeah.

1 Q. And what about in Ohio?

2 A. Again, they're able to make this determination because
3 they can observe the race of registrant on the voter file. I
4 can't do the same calculations for Ohio.

5 Q. So you don't know?

6 A. I don't know.

7 THE COURT: How many other states besides Florida
8 collect the racial?

9 THE WITNESS: Every state that was covered under
10 section 5 of the Voting Rights Act.

11 BY MR. KAUL:

12 Q. So let's talk about the other component, the census
13 tracts. First, can you just give an overview of census
14 geography and, in particular, compare a census block to a
15 census tract?

16 A. Sure. So the census geography is divided up into
17 basically three main levels. The smallest is a census block.
18 As I recall, there's something like 11 million census blocks in
19 the United States. So on average, a census block in the U.S.
20 has about 30 people. 300 million divided by 11 million. So
21 they're often approximately in an urban area would be like a
22 city block.

23 A census block then can be aggregated up to what's known
24 as a census block group. I'm not quite sure how many census
25 blocks constitutes a census block group but it's an

1 intermediate level.

2 And then the larger geography is the census tract which
3 combines census block groups.

4 Q. And census tracts are, on average, something like 124
5 times bigger than census blocks, right?

6 A. That sounds about right, yeah.

7 Q. How do precincts compare in size to census blocks?

8 A. Precincts are not standardized. So the size of
9 precincts vary a lot across different places. So I'm not -- so
10 I'm actually not sure of the question. In Florida where they
11 do precincts and census blocks. I assume that they're bigger
12 but I just don't know how much bigger.

13 Q. Is it fair to say that precincts are smaller than census
14 tracts?

15 A. Oh, sure. Yes.

16 Q. And you think they're bigger than blocks but you're not
17 certain?

18 A. Well, they're almost certainly going to be bigger than
19 blocks because blocks are quite small units.

20 Q. That difference of about 124 times between census tracts
21 and census blocks means that they're going to be far more
22 racially homogenous census blocks than there are census tracts,
23 right?

24 A. Yes. Yes. That would follow.

25 Q. As a result, the degree of certainty in determining a

1 person's race when you were working at the block level is much
2 higher than when you're working at the tract level, right?

3 A. If we stipulate that the racial composition is measured
4 at the census block is correct five years after the census is
5 taken, that would be true.

6 Q. So as an extreme example, if you had 50 all-white census
7 blocks and 50 all-black census blocks within a single census
8 tract, you could determine the race of all the individuals at
9 the block level but none of them at the tract level, right?

10 A. Again, assuming that the census block assignment is
11 correct. I'm sorry. If I may back up. I'm not quite sure
12 that I could assign none of them at the census tract level.
13 Again, it depends on not just the composition of that
14 particular census tract but the concentration of
15 African-Americans in all of the surrounding census tracts
16 throughout the state.

17 Q. You could assign, accurately assign, the race of far
18 more people at the block level, right?

19 A. Sure. Sure.

20 Q. But you chose to use census tracts in this case, right?

21 A. That's correct, yes.

22 Q. Are you aware of any literature that uses census tracts
23 to do race coding?

24 A. Well, the principle of race coding is that you could use
25 almost any level of geography to do it. So there's no --

1 there's no obvious reason not to do it if you don't have data
2 available at the lower level or you think the data at the lower
3 level is mismeasured. So I was primarily -- I had had
4 discussions with my colleagues and reviewed their papers about
5 how sensitive their results were to the size of the units that
6 they were using and I did have concerns about the accuracy of
7 census block assignments five years after the census had been
8 taken. So based on the review of their work, discussions with
9 them and my concerns about the accuracy of census
10 block-assignments, I chose to use census tracts.

11 Q. And you testified at your deposition that you did that
12 based on a working paper that your colleagues had written,
13 right?

14 A. Yes. I believe I reviewed a previous version of a paper
15 in which they had dealt with the issue of the size of the
16 geographies. The final version of the paper, which was
17 presented to me in a deposition, the one that they had prepared
18 for actual publication, did not include that discussion.

19 Q. And your recollection was that the paper compared the
20 performance of surname imputation, that that procedure using
21 both census tracts and census blocks found that using a census
22 tract provides much more reliable estimates, right?

23 A. Yeah. I don't know if I would have said that. I guess
24 my assessment was that it didn't matter if we had both and it
25 didn't matter very much, and I had greater confidence in the

1 reliability of the tract assignment that using the tracks was
2 okay.

3 Q. Let me show you a copy of your deposition transcript.
4 Let me direct your attention to page 65.

5 A. Which exhibit is it for me?

6 Q. My apologies. If I might walk up with this.

7 And I would ask you to read through page 65, including,
8 in particular, the paragraph beginning on page -- paragraph 17.

9 A. Yes. That's correct. Yes. I have done that.

10 Q. Does that refresh your memory?

11 A. Yes.

12 Q. So you did say that they found that using census tracts
13 provided much more reliable estimates?

14 A. Yes, I did say that. I now believe that was a faulty
15 recollection. I believe that the more accurate statement is
16 that it doesn't matter significantly if your goal is to
17 minimize the number of false positives in the coding
18 assignment.

19 Q. And that would have been a significant finding for the
20 literature, correct?

21 A. If using census tracts was better than census blocks?

22 Q. Yes.

23 A. Yeah. It would certainly make life easier for other
24 people.

25 Q. That would have contradicted a lot of intuitions about

1 aggregation bias, right?

2 A. Again, this is really about using individual data. So
3 it's not directly related to issues of aggregation bias but the
4 accuracy. But the point I was really trying to make was like
5 in a situation where I had reasons to be sceptical of the
6 accuracy of block assignments five years after the fact that I
7 thought using census tracts was a reasonable given previous
8 findings and even the current findings which show that the rate
9 of false positives is not very sensitive to the size of the
10 census geography that's being used.

11 Q. Given the significance of that finding, if it had been
12 in the original draft you would have expected to see it in the
13 final draft too, right?

14 A. Yeah. I would expect.

15 Q. And it's not in the final draft?

16 A. It's not in the final draft, no.

17 Q. In fact, the final draft doesn't discuss census tracts
18 at all, right?

19 A. That's my recollection from the deposition, yes.

20 Q. It does discuss census block analysis, right?

21 A. Yes.

22 Q. And it finds that census block analysis in combination
23 with surname analysis is much more accurate than just surname
24 analysis, correct?

25 A. Yes. It does find that.

1 Q. It's more accurate than precinct plus surname analysis,
2 right?

3 A. Again, it depends what type of mistake you want to
4 minimize. If your concern is about both minimizing false
5 positives, meaning that you incorrectly assign the race of
6 African-American to someone, my recollection is that there's
7 not a big difference. What their findings are that the big
8 differences are in the kind of false negative rate the
9 propensity is to assign someone a code of African-American when
10 they're not actually African-American. I was much more
11 concerned about the false-positive problem than the
12 false-negative problem.

13 Q. And are you aware of any studies on the false-positive
14 rate when a person uses census tracts on names?

15 A. No, I'm not. I just know from that particular paper
16 that there's not a lot of sensitivity of the false positives to
17 the size of the geography that's used.

18 Q. So there's not a lot of difference in false positives?

19 A. That's correct.

20 Q. But the false-negative rate is much lower with census
21 blocks?

22 A. That's what I recall from the paper, yes.

23 Q. So doesn't that weigh in favor of using census blocks?

24 A. If I believe that the census blocks were accurate then I
25 would have used them. Census blocks are quite, as I stated

1 earlier, quite small. Their populations can change fairly
2 dramatically over the course of five years. And plus, the
3 ability to kind of accurately assign a voter into a census
4 block is subject to errors because, again, they're like the
5 magnitude of city blocks. So a small error in the street
6 address can put you in one block versus another but would not
7 necessarily change the census tract that you live in.

8 Q. Your colleagues' study would have been subject to those
9 concerns, right?

10 A. They were looking at the 2000 -- that I recall, they
11 were looking at the 2012 election using a voter file from that
12 election and so the difference of time between their use of the
13 census blocks and actual census enumeration was considerably
14 smaller than mine was.

15 Q. 2012 election you expect to see about half of the effect
16 you'd see at the beginning of 2015, right?

17 A. Yeah. Maybe approximately. We're talking about the
18 difference between November of 2012 and April of 2010 versus
19 January 2015 and April 2010. So one is less than two years and
20 one is about five years.

21 Q. And do you recall what results your colleagues received
22 for false negatives and false positives for census block
23 plus --

24 A. I don't remember the exact numbers.

25 MR. KAUL: May I approach, Your Honor?

1 THE COURT: You may.

2 BY MR. KAUL:

3 Q. Let me show you a copy of that to refresh your
4 recollection. I'll direct your attention to page 7.

5 A. Okay.

6 Q. Following the black percentage, false negative for name,
7 that's the 84 percent figure we were talking about before; is
8 that right?

9 A. Yes.

10 MR. KAUL: Your Honor, should we bring this up on the
11 screen, would that make it easier? I'd have to do the Elmo.
12 It might not make it easier.

13 THE COURT: It's pretty easy. Just pull it out.

14 BY MR. KAUL:

15 Q. That is the 84 percent name figure you had referred to
16 before?

17 A. You referred to it.

18 Q. You agreed that that was the correct number?

19 A. Sure.

20 Q. And this indicates that the false negatives for
21 African-Americans dropped to 38.2 percent when you go down to
22 the name and precinct level, right?

23 A. Yes.

24 Q. And it goes down further to 32.1 percent when name and
25 census block are used, right?

1 A. Yes.

2 Q. False positives are lowest when you just use name,
3 correct?

4 A. Yes.

5 Q. But they're slightly lower from precincts to blocks,
6 right?

7 A. Yes. Blocks are slightly lower than precincts.

8 Q. So as the unit size gets smaller, not only do the false
9 negatives go down but the false positives go down, right?

10 A. But by very, very small amount.

11 Q. But that would suggest that both the false negatives and
12 the false positives weigh in favor of using a smaller size
13 unit, right?

14 A. Actually suggests to me that it doesn't make much of a
15 difference. And if you have concerns about assignment into
16 blocks that using a higher census geography is justified.

17 Q. By the way, that showed that the false-positive rate for
18 black voters using the block approach was only 2.6 percent,
19 right?

20 A. Yes.

21 Q. So not a significant issue?

22 A. I'm sorry, what do you mean by significant issue?

23 Q. Do you regard 2.6 percent false-positive rate as a
24 significant issue?

25 A. It seems like a manageable level of uncertainty about

1 that question.

2 Q. And by moving from the block level to the tract level
3 you have many more racially heterogeneous units, right, as a
4 percentage?

5 A. Yes. More racial heterogeneity. I want to stress the
6 simple correlation between racial heterogeneity and the impact
7 on the imputations is not all that direct. What really matters
8 is like if you're African-American, what's the probability that
9 you live in a particular census tract? So with that caveat
10 then I would say yes.

11 Q. Is there any discussion in your report about these
12 issues with the data we've been discussing?

13 A. Footnote 9 discuss -- well, the footnote 9 plus the
14 discussion preceding footnote 9 discusses my decision to choose
15 the threshold of .7 to provide a good balance between the
16 likelihood of classifying too many voters as black versus
17 qualifying too few. That's on page 7 of my report.

18 Footnote 9 says, while Imai and Khanna have shown these
19 imputation procedures to be quite accurate, there are a variety
20 of reasons to worry about false positives and false negatives.
21 False positives may arise, for example, due to voter changing
22 surnames upon marriage. False positives may be created when a
23 voter is among a small minority within her census tract
24 choosing a cutoff of .76 to balance such misattribution.

25 Q. That's different from the issues we've been discussing,

1 right?

2 A. I think it's related to the issue that, again, I was
3 primarily concerned with what would create false positives and
4 what wouldn't. And my recollection of the Khanna/Imai my paper
5 and what I've just seen is that the false-positive rate is not
6 all that sensitive to the issues about the size of geography
7 but I do acknowledge in footnote 9 that it may be sensitive to
8 some other issues outside of that discussion.

9 Q. And do any of your tables include a confidence interval
10 for uncertainty in your racial identifications?

11 A. None of them do, no.

12 Q. And you showed in table 3 a statistically significant
13 result before between black EIP voters from the eliminated
14 group and the preserved group, do you recall that?

15 A. Yes, I do.

16 Q. That had a p-value, a confidence interval?

17 A. That's correct.

18 Q. Did that confidence interval incorporate uncertainty
19 from the racial identifications?

20 A. No, it did not.

21 Q. And that would increase the uncertainty, correct?

22 A. Generally, yes. Yes.

23 Q. Let's switch topics a bit. In conducting your analysis
24 you used data from 2010 and 2014, right?

25 A. That's correct, yes.

1 Q. And that's midterm-election data?

2 A. Yes.

3 Q. Initially in your deposition you said that you didn't
4 have 2012 or 2008 data; is that right?

5 A. I said, I remember not recalling having those data
6 because I didn't ask for them and then when I wrote code
7 assuming that I didn't have them. It does appear that they
8 were in the submission.

9 Q. But initially you said you didn't have them, right?

10 A. Yeah. Initially I said I didn't have them but then I
11 recalled that it was possible that I could have had them and
12 not noticed. And so I backed up and said, well, that's
13 possible. I was asked whether I could confirm whether or not
14 that that was true or not and I said in principle I could by
15 checking the data. And I have since checked the data and the
16 2012 data is there, but as I said in the deposition, I never
17 used it essentially because I never asked for it because it
18 wasn't relevant to the type of analysis that I wanted to do.

19 Q. And you said that you didn't use 2012 data because, in
20 your view, midterms rather than presidential elections should
21 be used for assessing the impact of election rules on turnout?

22 A. So I did make that argument. Of course the main reason
23 why I used midterms is because the most indisputably essential
24 then I needed to do the study I wanted to do was two elections.
25 One prior to the election law changes and one after. And I

1 also wanted elections that were roughly similar. So even if I
2 had thought that it would be a good idea to include
3 presidential elections, I would not have been able to do so.

4 But I did add and still maintain that there are real
5 advantages to using midterm elections because, as I said during
6 my original testimony, it allows us to kind of strip away many
7 of the kind of extraneous factors that drive turnout in
8 presidential-election years and allow us to focus precisely on
9 whether or not the changes in early voting increase the cost to
10 voting for particular groups.

11 Q. Voters in midterms tend to be the voters who are the
12 most engaged, high-interest voters, right?

13 A. Yes. I believe that's generally true.

14 Q. And they're more educated, on average, than presidential
15 election-year voters?

16 A. Yes. That is true.

17 Q. And they have higher income, on average, than
18 presidential election-year voters, right?

19 A. Yes. That is true.

20 Q. So aren't they the types voters who are the least likely
21 to be deterred from voting by new burdens on voting?

22 A. So what you described is the averages of voters in, of
23 course, midterms and elections. What we really want to know is
24 what the marginal voter, what's happening to the marginal
25 voter. The person that's kind of roughly in between a voter

1 and not a voter.

2 So the reason why all of those demographic patterns that
3 you described occur is because highly-engaged voters,
4 high-income voters, high-educated voters vote in every
5 election. So their decision to vote or not to vote, at least
6 in a federal election, is pretty much a constant. So what you
7 really want to do is to look at the effects on the types of
8 voters that, say, vote sometimes but not always or just on the
9 cusp of voting or not voting in a particular election.

10 So the fact that the midterm electorate is wealthy or
11 more engaged, whatever, is not the kind of the crucial point.
12 It's in midterm elections you get kind of a pure effect of the
13 procedures of voting because there are many low-income,
14 less-educated voters who do vote for which you could assume
15 that maybe changes in election law would matter. I think the
16 midterm analysis is just as able to identify those voters as an
17 analysis in a presidential-election year.

18 Q. But the percentage of the electorate in a presidential
19 year is a much greater percentage of those types of marginal
20 voters, right?

21 A. That's right. Because even marginal voters will kind of
22 vote in high numbers in presidential-election years.

23 Q. So to the extent that you'd be able to tease an effect
24 of those laws out on the turnout rates, it would be by looking
25 at presidential years where there would be more people

1 affected, right?

2 A. No. I don't think that's the right way to think about
3 it. There are lots of people who vote in presidential-election
4 years because it's deemed a more important election, there's
5 more campaign advertising, there's more voter mobilization.
6 What we really want to know is what is the isolated effect of
7 change in election laws. So my argument is, well, we should
8 look at some elections where much of that is stripped away and
9 we can look at exactly for the types of voters who are on the
10 fence about voting and not voting, the types that the
11 plaintiffs allege would be affected by this, can we find
12 effect. I think it's better isolated in a comparison of
13 midterm-election years than it would be in a comparison of
14 presidential-election years where you've got all this other
15 stuff going on.

16 Q. Are you aware of any literature that supports that
17 position?

18 A. What is the -- could you --

19 Q. Comparisons between midterm years are preferable for
20 evaluating the impact of an election law and turnout as
21 compared to presidential years?

22 A. I'm unaware of anything directly saying that. But the
23 principles of drawing inference which suggest you want to find
24 the cleanest, say, natural experiment in order to test for an
25 effect is pretty well-established. Much of the literature on

1 voter mobilization, especially the experimental literature, is
2 focused precisely on low-profile elections because they believe
3 that it's easier to detect the effects of their canvassing,
4 their phone calls, their mobilization efforts in an election
5 where there are not a lot of other stuff going on.

6 So the logic of that principle that's well-established
7 in the mobilization literature and the canvassing literature
8 can be applied in this case just as well.

9 Q. And that literature you're talking about, it's talking
10 about like school board elections, right?

11 A. They look at a variety of elections. They will do
12 school board elections, they will do midterm elections, they'll
13 do state assembly elections. My sense is that they try to
14 avoid big presidential elections for exactly this problem.

15 Q. The reason you want to do something like a school board
16 election is you expect a very low turnout that would be
17 consistent from year to year, right?

18 A. The rationale for using a school board election would be
19 that you want to isolate precisely why someone votes and why
20 they don't vote, and there are less things going on that might
21 be outside the control of the experimenter.

22 Q. You are aware of literature comparing presidential year
23 to presidential year, right?

24 A. Oh, sure. It's often done if your primary goal is to
25 simply look at presidential effects in presidential elections.

1 I think it's social scientifically problematic if you want to
2 make a very strong statement about the causal impact of a
3 particular electoral procedure.

4 Q. But in your deposition you cited a study by Paul Gronke
5 and Charles Stewart comparing presidential election years in
6 Florida, right?

7 A. Yes. They do do that, yes.

8 Q. And would you agree that they are two leading political
9 scientists?

10 A. Yes. Yes, they are.

11 Q. And -- go ahead.

12 A. Although at the time they did the study and they looked
13 for the two elections for which they could get one election
14 before the reform and the one election after, it just so
15 happened that it would be presidential elections that they
16 would look at. So I'm not sure that even if they agreed with
17 my assessment whether they would have been able to have done a
18 comparison of two midterm elections.

19 Q. And they found, by the way, that early-voting reductions
20 in Florida disproportionately burdened African-Americans,
21 right?

22 A. In one of my rejoinders in the NAACP case I questioned
23 that interpretation. They find that, as I recall, they find
24 that African-Americans were -- utilized early in-person voting
25 in higher rates but they did find that usage -- they find that

1 in the second election, the percentage of African-Americans in
2 electorate actually increased. So as I recall, I criticized
3 the changes in early in-person voting disproportionately
4 disenfranchised African-Americans in Florida.

5 Q. Their piece is an academic piece, correct?

6 A. Yes. That's my recollection.

7 Q. You criticize that as a defense expert in the NAACP
8 case?

9 A. I believe it was cited by other experts and I tried to
10 respond to the assertion that that was evidence in favor of a
11 disproportionate effect on African-Americans.

12 Q. Just briefly on the presidential versus midterm election
13 years. There's significant difference in turnout between
14 presidential and midterm election years in Ohio, right?

15 A. Yes. As there is in every state.

16 Q. Something like, from 2012 to 2014, it was something like
17 a 30 point difference, right?

18 A. That sounds about right, yeah.

19 Q. Have you compared the disparities in turnouts from
20 presidential year to presidential year versus midterm year to
21 midterm year?

22 A. In the state of Ohio or in general? I'm sorry. What
23 are you asking?

24 Q. Let's start with general.

25 A. I've done some work looking at voting participation over

1 the past 30 years and take note of the differences between
2 participation in general elections and midterm elections.

3 Q. There's often a greater shift in turnout from midterm to
4 midterm than there is from presidential to presidential, right?

5 A. I'm not sure. That's possible. Midterm turnout may
6 also be driven by whether or not there's a governor on the
7 ballot or the availability of statewide races.

8 Q. And in Ohio from 2010 to 2014 there was a turnout
9 difference of about eight and a half percent, right?

10 A. That's correct. I noted that in my report.

11 Q. That's because there was a competitive governor's race
12 the earlier year and not the latter year, right?

13 A. Yes. That's my recollection.

14 Q. That was the kind of confounding factor you were talking
15 about earlier, right?

16 A. That's actually -- I think that actually helps my case
17 in that the extent to which there was such a confounder it only
18 affected the participation of eight percentage points, whereas
19 having a presidential election increases turnout 30 points. So
20 I'd say presidential elections are approximately four and a
21 half times the confounder of having a competitive governor's
22 race.

23 Q. Go through that again, please.

24 A. So having a president on the ballot increases turnout
25 30 percent. Mostly for reasons that are completely unrelated

1 to the availability of early in-person voting. So we could say
2 that the 30 percent increase is the confounding effect of
3 having a presidential election.

4 You just asserted that the fact that the lack of a
5 competitive governor's race led to an 8 percent turnout so,
6 roughly speaking, that's a suggestion that there was an
7 8 percentage point confound based on whether or not there was a
8 competitive governor's race. Thirty is about four and a half
9 times as big as eight. So I think that's exactly my point is
10 that one wants to have elections where the basic decision to
11 vote is much more concentrated on the availability of voting
12 rather than all the other things that goes on in a presidential
13 election year.

14 Q. Do you know how turnout in Ohio in 2012 compared to
15 2008?

16 A. No, I don't know.

17 Q. There was a much smaller gap than the 8 and a half point
18 gap from 2012 to 2014, right?

19 A. That's possible, yeah.

20 Q. That would suggest that the 2010 to 2014 actually had a
21 bigger confounder in that difference, right?

22 A. Again, I'm not sure what you mean, in that sense what
23 you mean by a confounder. My argument is that the presence of
24 a president on the ballot is the confounder. So I would say it
25 just suggests that 2008 and 2012 had equal-size confounders.

1 Q. Do you agree that it would be inappropriate to draw
2 conclusions about whether laws at issue disproportionately
3 impact African-American voters by comparing 2014 turnout and
4 2014 turnout in Ohio?

5 A. I'm sorry, could you ask the question again?

6 Q. Yes. Do you agree that it would be inappropriate to
7 draw conclusions about the impact of the provisions that are at
8 issue in this case on voting based on a comparison of the --

9 A. You mean aggregate turnout?

10 Q. Aggregate turnout, yes, or African-American turnout?

11 A. Yes. I would agree. I would agree.

12 Q. You would agree?

13 A. I would agree.

14 Q. I made a note during your testimony before that you said
15 one of your conclusions is that the changes did not impact
16 turnout in 2014. Is that correct or is that not -- did you
17 make a statement that strong is what I'm wondering?

18 A. I'll need more context about when I said it. I believe
19 I was asked whether or not what inference I would draw in
20 looking at whether or not the rates of usage of early in-person
21 voting among African-Americans increased from one election to
22 the next whether or not I would state that as definitive
23 evidence that there was no effect and I said it was suggestive
24 but -- suggested that there are lots of other things in the
25 report that also point in that direction.

1 I also stated that there were changes in turnout from
2 2014 -- from 2010 to 2014 but they could not likely be counted
3 for by changing early voting patterns because more people used
4 early voting in 2014 than used them in 2010. So, again, I
5 don't think I would have said that that definitively proves
6 that there was no impact to the voting laws.

7 In my report, I focus primarily on the individual data.
8 Did the voting patterns of people who voted early on eliminated
9 days in 2010, did they disproportionately drop out of the
10 electorate or not? That, I think, is the strongest evidence
11 for the claim that the changes in the election laws does not
12 have a big impact. It's also backed up in the type of
13 aggregate statistics that you're asking about.

14 Q. So you're saying that's the best inference but you're
15 not drawing a conclusion; is that right?

16 A. I'd say that impli -- I would say that finding is
17 consistent with the overall thrust of the report and that there
18 are stronger evidence in the report and the sets of findings
19 together support a conclusion that it's likely that early
20 in-person voting availability did not change behavior in 2014.

21 Q. And that's all dependent on the data that we've been
22 discussing earlier today, right?

23 A. Yes. It's true that any statistical analysis one does
24 depends on the data that's used.

25 Q. Do you have a view as to whether there's a trend of

1 increasing early voting usage by African-Americans relative to
2 whites?

3 A. I don't have a strong view of that. Overall, I don't
4 have any particular knowledge about that specifically in Ohio.

5 Q. Do you know how the African-American use of early voting
6 in 2006 compared to 2010, for example?

7 A. No, I don't know. No.

8 Q. If there were an upward trend it would not be surprising
9 that that trend continued in 2014, would it?

10 A. It could be. There are studies that show that the
11 effects of convenience-voting procedures such as early voting
12 tend to wear off over time. So the assumption that any trend
13 that was in place will continue is not a necessarily solid
14 conclusion.

15 Q. What about same-day registration?

16 A. The question is whether there's a trend toward the use
17 of same-day registration?

18 Q. Whether the effect of that type of convenience voting,
19 to use your term, wears off over time?

20 A. It may be part of the study that I'm thinking about but
21 I didn't focus on it so I don't have a direct recollection of
22 that.

23 Q. There's a lengthy literature about, for example, the use
24 of election-day registration in Wisconsin, right?

25 A. Yeah. There's some papers, yeah.

1 Q. And Minnesota?

2 A. Yes.

3 Q. And those states have maintained some of the highest
4 turnout rates in the country, right?

5 MS. COONTZ: Objection.

6 THE COURT: Basis.

7 MS. COONTZ: I think we need to define election-day
8 registration and same-day registration using the terms
9 interchangeably are two different things within the literature.
10 Election-day registration being election-day registration and
11 same-day registration being the golden week type of
12 registration. I just ask clarification on that point.

13 BY MR. KAUL:

14 Q. Let me ask my question first. So has there been
15 persistent high turnout in those states?

16 THE COURT: Over what period of time?

17 BY MR. KAUL:

18 Q. Since the '70s?

19 A. Those are states that typically have high turnout. The
20 question of whether or not same-day registration is responsible
21 for that is more open, I think. The belief is that same-day
22 registration or I should say election-day administration where
23 you can register to vote on election day at the polls is
24 probably conducive to high voter turnout.

25 Q. And the literature suggests that the reason that happens

1 is because allowing people to register and vote in one trip
2 makes it much easier to register and cast a ballot than having
3 them do it in two separate acts, correct?

4 A. That would be an argument that people make. One of the
5 problems in reaching that conclusion definitively is that
6 whenever you have election-day registration, you also allow
7 people to register as close to the election as possible, and so
8 there are two effects going on. There's the convenience effect
9 you described that they can register and vote at the same time
10 and then there's the effect of like being able to register up
11 to election day and knowing which of those effects is the most
12 important is not something that I'm sure that we know.

13 Q. Not focusing on what's the most important. Just one of
14 the factors for that is the convenience of being able to do
15 both at one time, right?

16 A. It's possible but, again, without being able to parse
17 out how much of it is being able to register up to the
18 election, how much of it is the one-stop shopping is unclear.

19 Q. Do you know what the state of the scholarly literature
20 on that is?

21 A. No. The most recent paper I saw on same-day
22 registration just simply includes an indicator for whether or
23 not a state has same-day registration. And they don't control
24 for how long the end of the registration period is from the
25 general election. So that paper doesn't deal with it directly

1 and I do not recall any discussion in that paper of any other
2 papers that attempt to parse out how much of it is the length
3 in registration period and how much of it is voting and
4 registering simultaneously.

5 Q. Was it using the same-day registration as a control?

6 A. They were using the same-day registration as an
7 explanatory variable to explain turnout.

8 Q. And that suggests it's an important factor in turnout if
9 it has to be controlled for, right?

10 A. Well, it's the focus of the study whether or not it has
11 an effect. They do find that same-day registration has an
12 effect but we don't -- there's nothing in the study, as I
13 recall, to suggest whether or not it's because same-day
14 registration or election-day voting also reflects having a
15 registration period end much more close to the election. The
16 issue in extrapolating those findings in Ohio is that Ohio had
17 a 30 day window, you had to register 30 days before the
18 election. So Ohio was kind of unusual in that it had this
19 golden-week opportunity but one that was so far away from the
20 election.

21 As I recall, there may be only one other state in their
22 data set that remotely looks like Ohio in terms of its same-day
23 registration provisions and that was New Mexico. As I recall,
24 most states that have same-day registration, they also have
25 registration periods that end within 15 days of the election.

1 So it seems much more likely in those states that the
2 opportunity to register closer to election would have an impact
3 in addition to the opportunity to vote and register on the same
4 day.

5 Q. I'm going to ask Ms. Schultz to bring up your report,
6 page 12, table 3. Defendants' Exhibit 20. I'd like to ask you
7 about these numbers.

8 Putting aside any questions about the data from before,
9 just taking these numbers as accurate, these numbers show that
10 in both the eliminated group and the preserve group, black
11 early in-person voters were more likely to drop off in 2014
12 than white -- than all early in-person voters; is that correct?

13 A. That they were more likely not to vote?

14 Q. Yes.

15 A. Yes.

16 Q. And yet black early voting in 2014, you found, was
17 higher overall than white early voting in 2014, right?

18 A. What I found was that of those African-Americans who
19 voted, a larger proportion of them used early voting.

20 Q. That could be explained by new early voters who are
21 African-American, right?

22 A. Well, no. It could be explained that fewer
23 African-Americans voted. But of those who did vote, more of
24 them chose to vote early.

25 Q. Do you know whether fewer African-Americans voted in

1 2014 in a percent of the population?

2 A. There was a drop of African-American turnout from 2010
3 to 2014 but it was heavily concentrated among those people who
4 voted on election day, if I recall correctly.

5 MS. COONTZ: Your Honor, can I -- I don't want to
6 interrupt. Can I raise an issue with respect to the
7 separation. Two of the experts were in the courtroom and we
8 had a separation of witnesses and the separations applied to
9 everybody other than parties. So I would just ask that the
10 experts be asked to step outside.

11 MR. SPIVA: I thought at the beginning I had raised
12 explicitly experts and parties. That's how --

13 THE COURT: I heard parties. I didn't hear experts.

14 MR. SPIVA: I'm sorry. I don't want to interrupt you.
15 But I've never seen that handled anywhere, Your Honor, that
16 way. Experts usually are allowed to sit in on the entire
17 proceedings, including hearing fact witnesses. I think
18 Dr. Timberlake referred to some of the factual testimony.

19 THE COURT: Dr. Timberlake did sit in all day
20 yesterday or the day before.

21 MR. SPIVA: I certainly wasn't trying to get around a
22 rule but that's how I've always seen it handled is that experts
23 were allowed, I should say not entitled but allowed to observe
24 the entire proceedings, including other experts.

25 MS. COONTZ: I realize the damage is somewhat done. I

1 did not know who Dr. Timberlake was when he was sitting.

2 THE COURT: He was here the whole time.

3 MS. COONTZ: I would ask that from this point forward
4 the experts be asked to step out.

5 MR. SPIVA: I think they should be allowed to stay,
6 Your Honor. We wouldn't have any objection to their experts
7 listening to our experts. That's how -- in every case I've
8 ever been involved with, the experts have never been excluded
9 from any of the testimony.

10 MS. COONTZ: Your Honor, we specifically prepped our
11 witnesses by separating them. We have told our witnesses that
12 they cannot be -- cannot sit in the courtroom based on the
13 motion for separation and the order that applied to parties
14 only.

15 MR. SPIVA: We did that with fact witnesses, Your
16 Honor. But I assumed, I thought I had said but I assumed that
17 that would be true of expert witnesses and parties.

18 THE COURT: The issue when it was raised was
19 separation of witnesses except for parties.

20 MS. COONTZ: Yes, Your Honor.

21 THE COURT: Since one side has done it one way and one
22 side's done it the other, I'm going to go with what we
23 originally ruled, which was separation. So please ask them to
24 step out.

25 MS. COONTZ: Thank you, Your Honor.

1 MR. SPIVA: Okay.

2 THE COURT: Mr. Kaul, are you going to be there for a
3 while?

4 MR. KAUL: A bit more, Your Honor. I think it makes
5 sense to take a break.

6 THE COURT: Yes let's do that. We'll return at 3:15.

7 (A recess was taken at 3:00 p.m. until 3:25 p.m.)

8 THE COURT: Professor McCarty, if you keep your voice
9 up, that would be helpful.

10 THE WITNESS: Okay. I'll try to.

11 THE COURT: Thank you. Go right ahead.

12 BY MR. KAUL:

13 Q. Professor McCarty, I want to pick up where we left off.
14 You were talking about overall turnout in 2014 for
15 African-Americans as compared to 2010 comparing that to white
16 overall turnout from 2010 to 2014; is that right?

17 A. Yes. You asked me about that.

18 Q. You said that African-American turnout declined more
19 from 2010 to 2014 than white turnout did; is that right?

20 A. I believe that's the case, and I believe I may have said
21 that, yes.

22 Q. You believe what?

23 A. I believe that's the case and that I said that, yeah.

24 Q. Is that in your report?

25 A. I don't think it's in the report, no.

1 Q. Why didn't you include that in the report?

2 A. The basis of my report was mostly the comparison between
3 how individuals behaved in 2010 compared to how that same
4 individual behaved in 2014. So the changing turnout rates
5 didn't seem particularly relevant to the issues that I focused
6 on.

7 Q. With respect to the table that's up, are you saying that
8 that turnout difference is enough that it overcomes this
9 difference that's reflected on the chart?

10 A. I'm sorry, I don't know what you mean by that.

11 Q. I'll clarify. The black EIP voter's row shows a
12 slightly lower turnout for the eliminated group of
13 African-Americans but a significantly lower turnout for the
14 preserved group?

15 A. I hesitate on significantly just because it might be
16 confused with statistical significance which is not verified
17 here. But there is a larger gap between all voters and black
18 early voters among the preserved group.

19 Q. Are you saying that difference is wholly a function of
20 the overall decrease in turnout, the greater decrease in
21 turnout for black voters and white voters?

22 A. I don't know if I checked that directly. As I recall
23 voting turnout declined both for white voters and for black
24 voters with a turnout decline slightly larger for black voters.
25 But that as I noted in other parts of the report, it was not --

1 it was primarily the overall decline in voting. It wasn't
2 particularly concentrated among blacks, among those blacks who
3 voted early. The rates of participation of those who voted on
4 election day and voted by absentee were larger than the drop
5 among those who voted early.

6 Q. You did not compare the rates at which African-Americans
7 and whites used golden week to register and vote in 2012, did
8 you?

9 A. No, I did not.

10 Q. You could have done that with the data that you had,
11 right?

12 A. I do not believe that I could have. That would have
13 required knowing -- some people -- I had dates on which people
14 voted early. I would know whether they voted early if they
15 voted during golden week but I don't know whether they would
16 have registered during golden week. They could have already
17 been registered yet voted in person during golden week.

18 Q. But you didn't have registration dates?

19 A. No. I don't believe that I had registration dates.

20 Q. You had a variable in your data set called golden,
21 right?

22 A. That's correct.

23 Q. And that was for voters who voted during golden week?

24 A. That's correct.

25 Q. Not necessarily registered but all voters during golden

1 week?

2 A. Yes. People who voted during golden week would be
3 classified golden. I created that variable after having
4 received the data.

5 Q. And you could have used that variable to determine how
6 golden-week voters specifically acted in 2014 -- the 2010
7 golden-week voters acted in 2014, right?

8 A. Yes, I could have.

9 Q. But you didn't do that?

10 A. I did do that. Although I chose a slightly expanded
11 definition of the eliminated group. The eliminated group in
12 this table consists almost entirely of people who voted during
13 golden week plus a few hundred or so who voted during one of
14 the early weekends. So this table does not distinguish those
15 who voted during golden week and voted during one of the other
16 eliminated days. I'm sure that I did the analysis just
17 focusing on golden week but in order to have an efficient
18 presentation, I combined the two categories. But my
19 recollection is that it made no difference.

20 The bulk of the eliminated group were golden-week
21 voters. So what you find in this table would be what you would
22 find, I believe, if you just focused on golden week versus
23 nongolden week.

24 Q. Do you know what percentage were golden-week voters?

25 A. Of the eliminated group?

1 Q. Yes.

2 A. I do not know. I think it was a pretty large -- I think
3 it was a pretty large proportion of those in the eliminated
4 group. But I don't recall the exact numbers.

5 Q. Is it your understanding that it's the elimination of
6 golden week that's at issue in this case with respect to early
7 voting?

8 A. Yes. It is the elimination of golden week -- the
9 elimination of golden week is an opportunity to register and an
10 opportunity to vote. As I just stated, I can't say anything
11 about its elimination is an opportunity to simultaneously
12 register and vote. So all I could look at whether or not they
13 voted during golden week. But from the perspective of
14 evaluating how the calendar, electoral calendar might have
15 changed, it was just as logical to include people who voted on
16 other eliminated days as having been affected in their
17 opportunities to vote between 2010 and 2014. That's the
18 rationale for including them both together.

19 Q. Taking a look at this table that you have up, you
20 compare voters who voted in golden week or other eliminated
21 days in 2010 with days that remain on the calendar, right?

22 A. Yes.

23 Q. And the literature shows that early in-person voters
24 tend to vote on different days during early-voting periods
25 across elections, right?

1 A. I'm not sure which literature you're referring to.

2 Q. Let me ask you this. The literature indicates, for
3 example, that a voter who would vote in the third week of early
4 voting in Ohio is just as likely to vote the next year in the
5 second week as the third week, right?

6 A. I don't know. I have not seen that literature
7 specifically on Ohio.

8 Q. Are you aware of Dr. Gronke and Dr. Stewart's work in
9 Florida?

10 A. In Florida.

11 Q. And they found that other than the very first day of
12 voting, voters tended not to have a specific pattern in how
13 they used early voting, right?

14 A. I seem to recall something like that, yeah.

15 Q. So some of these voters in the preserved group may have
16 been golden-week voters in 2014 if it had remained, right?

17 A. Sure. It's possible, yeah.

18 Q. Let me take a look at table 2 with you which is on page
19 10 of your report. I want to focus on the second and the third
20 category, black voters who did not vote in 2010 and young black
21 voters. Do you see those?

22 A. Yes, I do.

23 Q. How do these numbers compare to the numbers for those
24 voters in 2010?

25 A. I don't know because I did not -- I would have had to do

1 the comparable table. I would have had to know who voted in
2 2006.

3 Q. So all we know from this table is that following the
4 implementation of the laws at issue, turnout of early in-person
5 among these groups that you've identified as low propensity is
6 lower than turnout among all black voters, right?

7 A. Yes. That's what the table suggests.

8 Q. And because we don't have 2010, we don't know -- don't
9 have an ability to decide whether that may or may not be
10 related to the challenged provisions, right?

11 A. That's correct. Ideally you would compare those between
12 2010, 2014 as I did in other cases but I couldn't do that here.

13 Q. You're treating all young voters as low-propensity
14 voters, right?

15 A. Yes. Just young voters as a category that's likely to
16 be low propensity, a proxy for being a low-propensity voter.

17 Q. That, again, is subject to aggregation bias, right?

18 A. Anytime you put an individual into a category you're, in
19 some sense, trying to take -- it's not aggregation bias, but
20 you're just simply looking to see whether the difference is in
21 group behavior across predefined groups.

22 Q. But the voters who drop off, for example, may not be the
23 low-propensity voters or the high-propensity voters, right?

24 A. What do you mean voters who dropped off?

25 Q. You can't tell from the difference in the overall black

1 turnout and the young black turnout, you can't necessarily
2 conclude from that that that reflects that low-propensity
3 voters react somehow differently to the laws in place than
4 voters overall, right?

5 A. No. It's just simply the usage rates of early in-person
6 absentee voting among the groups that can be plausibly
7 characterized as being, on average, low propensity is less than
8 black voters overall.

9 Q. I think what you said before is you can draw an
10 inference from this data; is that right?

11 A. Yes. Because I have data on individuals I can look to
12 see how particular individuals voted in 2014. I'm not
13 making -- unlike the aggregation bias, I'm not making
14 inferences about how individuals vote in 2014 based on
15 aggregate data from 2014. This is based on the 7 million
16 voters in my file and then, as we established earlier, the
17 roughly 565,000 of them that I coded as African-American.

18 Q. 565,000?

19 A. You gave me the number before. I'm just trying to
20 remember what you said.

21 Q. Okay. But what you're doing is you're aggregating those
22 people up, right?

23 A. No. There's no aggregation in that sense. I take voter
24 number 1, I look to see is he a low-propensity voter or not a
25 low-propensity voter, how did he vote. Take voter number 2,

1 make the same characterization and then compute averages across
2 groups. But that's not the aggregation bias that's been
3 discussed in this case. Aggregation bias is a very specific
4 term referring to the fact that you don't observe individual
5 data but you're imputing individual behavior based on looking
6 at aggregates.

7 So my analysis would be subject to aggregation bias if I
8 were using county-block data and saying, I believe this is a
9 low-propensity voting block. I believe this is a
10 high-propensity voting block. What was the usage of early
11 in-person voting in this block? That would be aggregation
12 bias. Simply looking to see whether there's group-level
13 differences in individual data is a completely separate issue.

14 Q. You're saying that because young black voters used early
15 in-person voting less than all black voters that that's
16 evidence that early voters, in-person voters are
17 high-propensity voters, right?

18 A. Could you restate the question?

19 Q. You're saying that because young black voters use early
20 in-person voting less than all black voters that that's
21 evidence that early voters tend to be high-propensity voters,
22 right?

23 A. That's not exactly what I said. I said the literature
24 in political science has long-established that younger voters
25 are less likely to vote than older voters and therefore, young

1 voters as a class would be considered low propensity, on
2 average. So what the comparison is, I'm comparing all black
3 voters with a subset of black voters for whom, on average, have
4 a lower propensity to vote and in that group that has a lower
5 propensity to vote on average, a lower percentage of them use
6 early in-person voting or absentee voting.

7 Q. And that's exactly an example aggregation bias?

8 A. No, it's not.

9 Q. You don't know if the 5.6 percent of early in-person
10 young black voters are high-propensity or low-propensity
11 voters, do you?

12 A. No. I have a proxy for that. There's an issue in that
13 I've basically used a proxy for low propensity, but that's
14 different than aggregation bias. Aggregation bias is a very
15 specific thing and what I've done is unrelated to that. We
16 might call it measurement error if you believe there's a
17 different measure for low propensity other than age. But the
18 political science literature has over and over shown that, on
19 average, a group of young black voters or young voters, period,
20 are less likely to participate than older voters.

21 I've not made any claims based on aggregate data. This
22 is all individual data where voters have been coded as to the
23 race. I have data on their age so I can categorize them as
24 likely to be low propensity or likely to be high propensity.

25 Q. But you didn't compare voters categorized as high

1 propensity and low propensity here, did you?

2 A. No. It's a difference of between the entire group and a
3 subset of the group. If I could have presented the table with
4 all old black voters and compared them to young black voters
5 and of course the differences would be larger because the all
6 black voters obviously includes the young black voters who use
7 convenience voting at lower rates.

8 Q. Let me talk about some of your criticisms of Dr -- I
9 guess ultimately they're criticisms you had of Dr. Smith's
10 report in the first place, correct?

11 A. Yes.

12 Q. The various conclusions you go through?

13 A. That's right.

14 Q. And these begin on page 19 and section 8, right?

15 A. No.

16 Q. That's your overall conclusions.

17 A. I have it that it begins on page 14.

18 Q. Actually that reminds me, section 5 right there which
19 relates to vote by mail. Again you calculate that 22.9 percent
20 of ballots cast by African-Americans were done by mail. The
21 rate for nonblacks was almost 22.8 percent. And this is after
22 the 2014 or this is in the 2014 election after the changes,
23 right?

24 A. That's correct.

25 Q. And because blacks turn out at a lower rate than whites

1 in this year, that means that black usage of absentee ballots
2 in 2014 would have been lower than white usage, right?

3 A. Among registrants but not among voters. There are lots
4 of reasons why there might be a racial disparity in turnout in
5 2014 that has nothing to do with the availability of
6 convenience voting. So what you said is true but it's not a
7 reason to conclude that blacks are less likely to use vote by
8 mail. If they decide to vote, they're just as likely as whites
9 to use it.

10 Q. One of your critiques is based on aggregation bias,
11 correct?

12 A. That's correct, yes.

13 Q. One way that you can correct for that is by comparing
14 white and black populations within a county, correct? In other
15 words, the concern was saying that a county with a high
16 percentage black population that has high golden rate usage,
17 for example, the concern with that, the aggregation bias
18 concern is that it could be the white voters in that county who
19 are using it, right?

20 A. That's correct, yes.

21 Q. So one way to correct that is to look specifically at
22 the white versus black comparison in that county, right?

23 A. Yes. If you could do that at an individual level that
24 would be exactly the way to correct it.

25 Q. Okay. And most African-Americans in Ohio live in just a

1 few counties, right?

2 A. I believe that's the case, yes.

3 Q. Now, you said that one of your critiques of
4 Dr. Timberlake is that he didn't account for Dan Smith's
5 correction of his methods of bounds analysis?

6 A. Yes. I said that.

7 Q. Dr. Smith, in response, said that that did not affect
8 his conclusions, right?

9 A. He said that but the figure that he presents is very
10 different than the figure in his initial report in ways that
11 are substantial and I point that out in my rejoinder to his
12 report.

13 Q. And we've been talking about 2010 and 2014 early
14 in-person voting data. In the NAACP case, Dr. Smith analyzed
15 2012 data also, right?

16 A. Yes, he did.

17 Q. And in that case he had 84 out of 88 counties to use for
18 his data?

19 A. That sounds right, yeah.

20 Q. And that data clearly showed a disproportionate usage of
21 early in-person voting by African-Americans, right?

22 A. No. The aggregation bias problem. He looks at census
23 blocks, finds a correlation between African-American population
24 in the census block and early in-person voting. So he does
25 find that African-American -- higher African-American census

1 blocks have higher rates of early in-person voting. But the
2 inference that it's higher rates of usage by African-American
3 individuals is the type of conclusion that I think is not
4 necessarily warranted.

5 Q. Are you aware of any evidence that points to
6 disproportionate white usage of early in-person voting in Ohio?

7 A. Disproportionate use of whites?

8 Q. That whites disproportionate use early in-person voting?

9 A. No. No. My criticism is about the existence in the
10 magnitude of the bias based on aggregate data, not that I have
11 a position on what the right answer is.

12 Q. One of your criticisms of Dr. Timberlake was that he ran
13 a bivariate regression and didn't control for other variables?

14 A. I don't believe I mention that directly in the report.
15 I think I mentioned that as part of the direct testimony
16 because ultimately the issue about aggregation bias is there
17 are many variables that might be related to early in-person
18 voting that just happen to coincide with African-American
19 counties or African-American census blocks.

20 Q. So that --

21 A. If one were to do that then perhaps you could eliminate
22 some of those -- use controls, perhaps one could eliminate some
23 of those biases and he did not do that. But I don't mention
24 that as the primary concern in my report.

25 Q. That's a new issue you've raised for the first time in

1 your testimony?

2 A. I was asked a question about what sorts of things could
3 lead to aggregation bias and I listed the same sorts of things
4 that I listed in my report. And then I was asked whether
5 Dr. Timberlake controlled for those things and I said no.

6 Q. And in comparing African-American turnout and
7 early-voting usage from 2010 to 2014, did you control for other
8 factors?

9 A. No, I didn't. But, again, I'm less concerned about the
10 aggregation bias in most of my study because I'm looking at the
11 same individual at two points in time.

12 Q. And if he were to have controlled for, say, education,
13 that would mean that the analysis didn't account for the fact
14 that any educational disparities between blacks and whites in
15 Ohio, right?

16 A. One can make an argument about what sorts of things that
17 you should or shouldn't control for. So education might be
18 something one would not want to control for because educational
19 disparities might produce voting rate disparities. The sorts
20 of things that I was asked about and suggested that wasn't
21 accounted for are quite different than those. They represent,
22 perhaps, proximity to voting sites because city versus noncity
23 and also things like partisan mobilization strategy which might
24 focus on democratic voters, a large proportion of which are
25 African-American.

1 So I would not advocate, as you suggest, controlling for
2 things like education or even income but certainly controlling
3 for things that might incidentally account for racial disparity
4 that was indicated that it was caused by things other than the
5 direct impact of race or racial disparity is what would have
6 been reasonable to try to adjust for.

7 Q. And do you think that voter distance to early-voting
8 locations is likely to change from 2012 to 2016 by race in a
9 material way?

10 A. Between 2012 and 2014?

11 Q. 2016.

12 A. I'm not aware of the details of that. Again, my focus
13 is on looking at two separate elections, 2010 and 2014. And
14 the extent to which one observes, you know, a difference in
15 racial utilization of something, you know, is it possible that
16 it can be accounted for by features such as partisan
17 mobilization and proximity to voting sites. I did not do an
18 analysis of how a change in voting sites would affect anything
19 because it wasn't, as I recall, kind of a relevant
20 consideration over the window in which I was studying.

21 Q. To the extent that things like partisan mobilization or
22 proximity to early-voting locations is likely to remain
23 approximately constant from 2010 to 2014 or 2012 to 2016,
24 controlling for those factors may actually lead to misguided
25 results about what's likely to happen in the subsequent

1 election, right, if those disparities persist?

2 A. Again, I don't know the details. I don't know, again,
3 the differences in mobilization strategies. Those things tend
4 to vary. Perhaps the proximity of particular census blocks,
5 the voting location didn't change very much. But I guess I'm
6 not sure what you're getting at in terms of how that would
7 affect the conclusions that one would draw from aggregate data.

8 It's still the case that we have data that are not just
9 aggregated but that are located in very different places at
10 very different partisan orientations, subject to different
11 pressures and, therefore, the same type of issues that I raised
12 I think are going to persist and could account for kind of a
13 persistent racial difference in the usage that's just
14 incidental to those factors and it would be a constant racial
15 difference caused by those incidental factors to the extent
16 that those factors persist. So I guess I'm just not sure.

17 Q. The point is --

18 A. That the persistence of those factors would really play
19 into any of these analysis.

20 Q. The point is those are reasons you might not want to
21 control for those things in your analysis, right?

22 A. No. I don't see that. I don't see that argument. If
23 it's the case, just to take an example, if it's the case that a
24 political party decides to mobilize its voters to vote early
25 and it does so in both elections and it concentrates these

1 efforts into areas that are heavily populated by its partisans
2 and its partisans tend to be of one racial group over another,
3 you would see a persistent difference in the rate of
4 utilization in early voting that's solely attributable to the
5 partisan strategies and only incidentally related to the race
6 of the people who are voting.

7 Q. You're assuming that the race and the partisan
8 strategies are unrelated there, right?

9 A. No. Actually I said the opposite. I assumed that race
10 and partisanship are highly correlated and that partisan
11 strategy is to mobilize the voters in their party and therefore
12 there's going to be a racial disparity in mobilization. If
13 that's true, election after election you would see, perhaps, a
14 racial disparity in the utilization of early voting from
15 election to election.

16 Q. On page 18 of your report you refer to the five counties
17 used by Professor Smith?

18 A. Yes.

19 Q. You criticize his use of those five counties, right?

20 A. Yes. I said that they weren't representative of the
21 counties in the state of Ohio.

22 Q. And those five counties contain over 60 percent of the
23 black population in Ohio, right?

24 A. I believe that was stated. I haven't checked it.

25 Q. Do you have any reason to dispute that?

1 A. No.

2 Q. And one of your critiques of Dr. Timberlake was that he
3 didn't rely or he didn't look to your critique of Dan Smith,
4 correct?

5 A. I wouldn't necessarily say I critiqued him for that. I
6 guess what I would say is that he took a set of findings from a
7 report and there were no evidence that he even reviewed any
8 countervailing claims put forth by other experts in that case.

9 Q. And --

10 A. Not saying that he would have had to agree with me but
11 there's no acknowledgment that he dealt with those criticisms.

12 Q. The Court in that case accepted Dr. Smith's report,
13 right? Credited Dr. Smith's report?

14 MS. COONTZ: Objection.

15 THE COURT: You can answer if you know.

16 THE WITNESS: I don't know. I don't know. I presume
17 so but I don't know for sure. The case was conducted on
18 briefs. I wasn't in the hearing so I don't know how it was
19 handled.

20 BY MR. KAUL:

21 Q. You never read Judge Economus' opinion?

22 A. I probably looked at it when it came down but I didn't
23 focus on details like the one you asked about.

24 Q. You would agree that it would be reasonable for a
25 scholar not to rely on an article that, for example, hadn't

1 passed peer review, right?

2 A. No. I disagree. Scholars routinely cite unpublished
3 work. In fact, it's almost their obligation to look at the
4 unpublished literature and make their own evaluations as to its
5 value in assessing their own work.

6 Q. What about an article that's been rejected from peer
7 review?

8 A. Many, many articles are rejected by peer review. The
9 leading political science journals, because of space reasons,
10 reject up to 90 percent of the articles that have been
11 submitted. Having been rejected by a journal is not an
12 indicator of the quality of the article.

13 MR. KAUL: No further questions.

14 THE COURT: Thank you, Mr. Kaul.

15 Redirect?

16 MS. COONTZ: Thank you, Your Honor.

17 - - -

18 REDIRECT EXAMINATION

19 BY MS. COONTZ:

20 Q. Dr. McCarty, I just want to run through with you a
21 couple of points that Mr. Kaul made. One of the criticisms
22 that Mr. Kaul raised was your use of 2010 data and 2014 data.
23 And I believe one of the issues that you discussed was not
24 accounting for individuals who registered between 2010 and
25 2014. Do you recall that?

1 A. Yes. I recall that discussion.

2 Q. And is that a concern for you with the conclusions that
3 you reached?

4 A. As I indicate in the section where I discuss that issue,
5 which is the appendix on weighting, I note that that issue
6 really only affects comparisons of aggregate rates of early
7 voting and their comparisons across 2010 and 2014. So
8 essentially the first set of numbers that I report are primary
9 examples of where that might -- there might be an effect. But
10 as I note in that -- as I note in that appendix, it does not
11 affect my comparisons of how individuals, in 2014, voted as a
12 function of how they voted in 2010. Because we know that if
13 you voted in 2010, you were in fact a registered voter in 2010
14 and so we know that the issue about having rolled off the voter
15 roll or having rolled on the voting roll is not an issue.

16 And the extent to which it's an issue in the cases where
17 I report aggregate votes, again, that's why I did the
18 adjustment so that I weighted early in-person votes in 2010 to
19 the county totals. So that if somebody voted early in a county
20 for which there was a big roll-off, that would have counted
21 more in my analysis of 2010 than somebody who voted early but
22 was in a county in which there were fewer roll-off of early
23 in-person voting.

24 So the weighting is supposed to adjust for much of those
25 differences. And I note in that report that in doing this

1 weighting, my conclusions will be valid as long as the actual
2 voting behavior, whether they voted early in person or voted by
3 mail or voted on election day is uncorrelated with race within
4 counties. So again, the issue about whether African-Americans
5 move more or less than others doesn't really affect the
6 weighting so much because I've weighted it to the actual
7 observed numbers of early votes and absentee votes.

8 So I think, again, I don't put a lot of weight on these
9 aggregate rates in the report but I did, I think, a very --
10 tried very hard to kind of make them valid given the
11 limitations of the data. But, again, I would stress that the
12 bulk of my report is the comparisons of individuals who appear
13 in the data both times. And that's the essence of my
14 comparison, for example, the preserve versus eliminated days.
15 And I think that's much less subject to the criticisms about
16 changes to the voter file between 2010 and 2014.

17 Q. So this criticism about the change in the voter file, it
18 wouldn't impact your findings in table 1?

19 A. It would slightly affect the findings in table 1 in that
20 the category did not vote in 2010 would include those people
21 who did not vote because they were not registered or were not
22 of legal age. But in terms of those people who voted in 2010
23 on election day, vote by mail, early in person, and we observed
24 them again in the voter file in 2014, we can be assured that
25 those numbers are not affected by the changes to the voter file

1 over that period.

2 Q. And would the change in the voter file affect the
3 conclusions or any of the numbers in table 2?

4 A. So table 2, as was discussed earlier, does include
5 aggregate rates for a single year. But it includes only
6 those -- it includes only those people who participated in 2014
7 in the first block, the all-black-voters' block. So that would
8 not be affected because all of those people were in the file in
9 2014. It would not impact the kind of young-black-voters'
10 block because we're observing whether or not they're a black
11 voter in 2014 and how they participated in 2014. So there's
12 no -- nothing used from 2010.

13 The interpretation of the second block might be affected
14 by this but as I laid out in my testimony, I'm including voters
15 who did not vote in 2010 as being a composite of three
16 categories: Those people who were not old enough to vote and
17 therefore not registered in 2010; those people who were
18 registered but chose not to vote; and, those people that
19 entered the voting rolls because they participated -- because
20 they moved to Ohio between 2010 and 2014. But as I described
21 in my testimony, I consider all three of those groups to be
22 categories of low-propensity voters.

23 Q. So these individuals who, as you said, rolled onto the
24 voter rolls are considered in the composite with respect to --

25 A. Yes. Because they're newcomers to the electorate in

1 Ohio and there is some evidence that some people vote less
2 frequently just after moving.

3 Q. Same question with respect to table 3. Did this -- does
4 this concern about individuals who rolled onto the voter rolls
5 between 2010 and 2014 pose any issues with the data in table 3?

6 A. No. Because every piece of data in this table reflects
7 someone who voted early in 2010.

8 Q. And the same thing holds true for table 4? Do we need
9 to go back?

10 A. Let me make one amendment to what I said about table 3.
11 It is possible that some of the people who voted early in 2010,
12 it's possible that some people who voted early in 2010 didn't
13 participate -- I'm sorry. Let me back up once more.

14 I think that's taken care of because, again, I'm only
15 looking at people who are actually in the voter roll in 2014,
16 how they voted, among those people who voted early in 2010 so
17 by definition, those are people who were in the voter rolls
18 during both election periods.

19 Q. Is the same thing true for table 4?

20 A. Yes. Table 4 is just a decomposition of table 3 so the
21 same things I said about table 3 hold for table 4.

22 Q. So you're doing an apples to apples comparison to the
23 people who voted in 2010 and how they voted in 2010, correct?

24 A. Correct. And, therefore, they were in the voter file.
25 They were registered voters in Ohio during both elections and

1 so issues about rolling off or being added just don't play any
2 role in those analyses.

3 Q. And issues with rolling on and rolling off of voter
4 rolls, would that always be true any time a political scientist
5 such as yourself compares two elections?

6 A. I think in general -- ideally, and I believe we
7 originally hoped that we could do this, the ideal thing to do
8 would have been to acquire a voter list as of January 2010 and
9 a voter list as of 2015 and, therefore, we would, by
10 definition, have -- know who's on the list in both elections.
11 That would have been ideal. The voter lists, as I understand
12 it, are kind of deleted as they're amended so you can't go back
13 and get a snapshot voter file, at least that far back, in order
14 to do the analysis and avoid that problem.

15 So it is possible that one could have the data that's
16 needed to completely avoid this problem but I think in general,
17 given the lack of available data, the fact I did not focus on
18 things that could be plausibly affected by that except in a
19 minor way and then reweighted the data to make adjustments.
20 Even in those cases it's probably the best I could do given the
21 data constraints.

22 Q. But this aggregate, this problem with aggregate data not
23 taking into consideration the people rolling on and rolling
24 off, would that hold true for any time you compare two
25 elections and that's why you weight the data?

1 A. So there's a couple things you asked about. You asked
2 about aggregate data. I'm dealing with individual data. And
3 so technically what we would assume is that, because of rolling
4 off and rolling on, there's some missing data from 2010. And
5 where you're comparing 2010 to 2014, as I've done in most of
6 the report, that missing data part doesn't matter. But there
7 is missing data in 2010. So if you want to compute aggregates,
8 we'd have to do something to adjust for that.

9 So what I assume which I think is a reasonable
10 assumption in context, is that the missing data is more or less
11 random with respect to race once we condition for whether or
12 not the voters voted early or voted absentee at the county
13 level and, therefore, the adjustments I make are quite sensible
14 ones, given the problems. But you would only kind of do this
15 kind of weighting of the data if you were concerned that you
16 had some missing data.

17 Q. So based on what we've talked about today, do you have
18 any concerns with the reliability of the conclusions that
19 you've reached and the numbers that appear in your report?

20 A. No. I think individual numbers, individual analyses may
21 be subject to particular criticisms. That's why I did a number
22 of analyses, looked at it from a different set of angles, a
23 variety of angles. So I think given that I did that, the
24 overall thrust the conclusion pushes in the same direction and
25 that direction being that the change in the availability of

1 early voting between 2010 and 2014 did not materially affect
2 the participation in the 2014 election overall, nor did it
3 disproportionately affect participation among
4 African-Americans.

5 Q. You also talked about the difference between using
6 census blocks and census tracts. Mr. Kaul questioned you at
7 length about your decision to use census blocks. And you were
8 asked about this -- the paper by is it -- the report regarding
9 false positives and false negatives when using census blocks
10 versus precinct level?

11 A. That is correct. Yes, I remember that.

12 Q. Are you concerned about your use of census tracts in
13 light of that study that Mr. Kaul presented you?

14 A. No. I feel very confident that had I done it with
15 census blocks that the thrust of the conclusions would not have
16 been changed.

17 Q. And you talked about different thresholds you used to
18 test whether blocks or tracts would be more appropriate.

19 A. To be clear, I didn't directly test whether blocks or
20 tracts would be more appropriate. I simply noted that I did
21 not feel like the choice made much of a difference because I
22 was able to adjust the thresholds for what I coded for when I
23 coded a voter as African-American. My thought was that if
24 there was this issue about using census tracts and them being
25 not racially homogeneous enough to provide adequate information

1 that as I changed these thresholds and used different rules for
2 coding voters as African-American that the results would have
3 changed due to the types of errors that have been suggested
4 might occur from the use of census tracts.

5 Since the results were very robust to the decisions I
6 made with respect to those thresholds, I'm extremely confident
7 that the choice to use census tracts over census blocks would
8 not have materially changed any of the conclusions that I
9 reached in this report.

10 MS. COONTZ: If I can have just one minute, Your
11 Honor.

12 Thank you, Dr. McCarty. I have nothing further.

13 Your Honor, I would move to admit his report into
14 evidence.

15 MR. KAUL: No objection.

16 THE COURT: You have further questions?

17 MR. KAUL: No, Your Honor.

18 THE COURT: All right. Thank you, Doctor. You may
19 step down.

20 So we're switching back to the plaintiffs' case. And
21 this would be Dr. Yang?

22 MR. SPIVA: Yes, Your Honor.

23 THE COURT: Sir, if you'd approach the stand, raise
24 your right hand and be sworn.

25 (Witness sworn.)

1 THE COURT: Please be seated.

2 You may inquire.

3 - - -

4 MUER YANG, PH. D.

5 Called as a witness on behalf of the Plaintiffs, being first
6 duly sworn, testified as follows:

7 DIRECT EXAMINATION

8 BY MR. KAUL:

9 Q. Good afternoon, Dr. Yang.

10 A. Good afternoon.

11 Q. First, would you please state your name and spell it for
12 the record?

13 A. My name is Muer Yang. M-U-E-R, Y-A-N-G.

14 Q. And what do you do for a living?

15 A. I'm an assistant professor.

16 Q. And where do you work?

17 A. In University of St. Thomas in Minneapolis and St. Paul.

18 Q. And what is your field of study?

19 A. Operations management.

20 Q. And I'm, in a minute, going to ask what you that is.

21 But did you say what university you're at, I'm sorry?

22 A. University of St. Thomas.

23 Q. Thank you. And could you just provide a brief overview
24 of your educational history?

25 A. I got my bachelor's degree in management information

1 system from Tsinghua University which is in Beijing, China.

2 And if I may say is the best university in China. I also got

3 my masters degree in the same university and in management

4 science. And then I got my Ph.D. degree in operations

5 management from University of Cincinnati.

6 Q. So you came to the United States for your Ph.D.?

7 A. Correct.

8 Q. And why did you do that?

9 A. Because at that time I was born in Beijing and I spent
10 my first 22 years in the same city, I think I need to go
11 somewhere else. And then I also want to get my Ph.D. degree as
12 well. So I applied for 15 schools in the U.S. because we all
13 know U.S. has the best higher-education system. And I got an
14 offer from Cincinnati so that's why I came.

15 Q. And how long were you in the Ph.D. program?

16 A. Five years.

17 Q. And did you obtain your Ph.D.?

18 A. Yes. In 2011.

19 Q. And what is your Ph.D. in?

20 A. Operations management.

21 Q. And what is operations management?

22 A. Operations management is a field of study that concerns
23 with how to manage and improve the process of productions and
24 services.

25 Q. And does operations management include analysis of

1 queues or weighting times?

2 A. Queue analysis is one of the important or key parts of
3 operations management.

4 Q. And why is that important to operations management?

5 A. Because in operations we study productions, we study
6 services and almost any of the field has waiting lines. Either
7 people are waiting or the parts to be processed are waiting in
8 front of the machines. So every time we have a scarce
9 resource, there's going to be a queue. So if you improve the
10 efficiency of the system, you want to reduce the wait time. So
11 that's basically the queue analysis is key component in our
12 field.

13 Q. And queue analysis can be applied in all sorts of area
14 of business, right?

15 A. Correct.

16 Q. And can it also have application to electoral systems?

17 A. Absolutely.

18 Q. Can you explain how it applies?

19 A. So for, let's say, on election day and if I talk about
20 from the queuing systems and the servers in our world, that's
21 basically a number of the DRE voting machines or voting booth,
22 whatever they're using in that voting system, and then voters
23 arrive, it's the arrivals in queuing a system and the arrivals
24 then take to be served by the servers and leave. So that's a
25 very typical queue system.

1 Q. After obtaining your Ph.D. did you go to St. Thomas?

2 A. Yes.

3 Q. And have you been there since?

4 A. Yes.

5 Q. So you've been there for five years?

6 A. This is my fifth year, yes. That's correct.

7 Q. And what do you teach at St. Thomas?

8 A. I teach operations management. That is undergraduate
9 course and also statistical methods for decision making.
10 That's for MBA students.

11 Q. And have you won a teaching award -- I'm sorry, a
12 research award during your time?

13 A. Yes, I did. This summer actually. Last year. So that
14 was Susan Heckler's Research Award.

15 Q. And what's that for?

16 A. This award started two years, three years ago and that's
17 for the excellence of research in college of business in our
18 school.

19 Q. Have you used queuing analysis or lines analysis in
20 practice?

21 A. What do you mean by practice?

22 Q. I'm sorry. Have you worked with practical applications
23 of queuing analysis?

24 A. Yes, I did.

25 Q. Can you explain that?

1 A. So my Ph.D. thesis, two-thirds of my Ph.D. thesis is
2 talking about voting machine allocations and we're using
3 Franklin County, Ohio in 2008. That's one of the motivation
4 applications. So we developed the algorithms and proposed a
5 better machine allocation algorithm so that we can better
6 utilize the resources to reduce wait times. And, also, I'm
7 still working on the election problems, voting problems since
8 then.

9 Q. And your election solutions have not been put into
10 effect yet, is that right?

11 A. Correct. Not yet.

12 Q. And are you working with somebody to promote that
13 solution?

14 A. Yes. One of my co-author, Ted Allen, and he's from Ohio
15 State. So we are collaborating with a lot of papers together.
16 And he and I were thinking we should make some real impact. We
17 really want to make our research to make some real social
18 impact. So he and I, we're thinking to promote our method to
19 be actually used by the election officials.

20 Q. And he's actually an expert for the defendants in this
21 case; is that right?

22 A. That's correct.

23 Q. Is that a weird situation?

24 A. Uh-huh.

25 Q. The two of you have co-authored papers, correct?

1 A. Yes.

2 Q. And have you put your queuing analysis or wait-time
3 analysis into practice in the healthcare field?

4 A. Yes, I did.

5 Q. Can you explain?

6 A. One of the project I did with Dr. Scurlock, he was the
7 director of the cardiac department of Mount Sinai Hospital in
8 New York, so at that time he said they were struggling with the
9 ICU beds allocations, the ICU beds is so scare resource for
10 that hospital. At the same time they have a large amount of
11 people, patients want to get their surgeries and they want to
12 have a better rule how to admit those patients to the ICU unit
13 so they can improve the efficiency and the approval rate for
14 that system. So we used the queue analysis in that system and
15 proposed a better rule for them to use in practice.

16 Q. And are you now working with a second hospital?

17 A. Yes. I'm still working with him and he just moved to
18 another hospital and that is Advanced ICU Care and
19 headquartered in St. Louis, Missouri. That is a remote or
20 totally ICU. That's using the remote technology to monitor
21 multiple or many ICUs across the country because it's so new so
22 he doesn't know how to staff his -- his doctors, nurses, all
23 the resources. So he want me to help him to identify a better
24 rule or how to allocate those resources he has.

25 Q. And in your time as a professor, have you published in

1 multiple journals?

2 A. Yes.

3 Q. And does that include some of the leading journals in
4 operations management?

5 A. Yes. Some of them are. I think in our business school
6 we thought there's a journal such as a POMS, *Production and*
7 *Operations Management and IIE Transactions*. Also I published a
8 leading critical -- the leading healthcare journals as well,
9 *Critical Care Medicine*.

10 MR. KAUL: Your Honor, I would move that he be
11 qualified as an expert in operations management.

12 MS. PIERCE: No objection, Your Honor.

13 THE COURT: Very well. He shall be.

14 BY MR. KAUL:

15 Q. Dr. Yang, can you explain to the Court the different
16 modes of analyzing queues in your profession?

17 A. So for queue analysis right now we have two major
18 methodologies for queue analysis. So one is using analytical
19 models to study queues which is we know we call it queue
20 theory, queuing theory. And another approach is using
21 simulation to study queues.

22 Q. And I'll talk to you about the relative merits of those
23 later but let me first ask you about simulation. Is one of
24 your expertises in simulation?

25 A. That's correct.

1 Q. And can you explain just how simulation works?

2 A. So simulation is basically trying to mimic or recreate
3 the reality, the real systems, and then over the time. And
4 right now, most of the simulation studies is using -- is
5 computer based. So we are using some software and then to
6 create a system in the computer. And then we can run it, try
7 different scenarios and see what's going to happen, what would
8 happen if certain parameters are changed.

9 Q. And this is used to assess likely wait times?

10 A. Yes.

11 Q. Or expected wait times?

12 A. All kinds of wait times can be evaluated in simulation
13 model.

14 Q. And how are these models tested?

15 A. You mean evaluate or what do you mean by tested?

16 Q. How is the accuracy of the model tested?

17 A. Usually in the simulation model we first of all need to
18 capture the key characteristics of the system and, for example,
19 using the voting on election day. So we have to capture how
20 many machines are there and how people arrive and how people
21 vote that call on people -- it will take each person to cast a
22 ballot. And that how the queue is configured. So this
23 basically key characteristics and it will be captured by the
24 model.

25 And also we need to have the data input parameters such

1 as how many people will show up and how many machines. Those
2 we need based on real data, the closer, the better. And then we
3 just let it run. So simulation, the computer can run it
4 multiple, multiple times so we can get -- compare the outputs
5 with what we actually observed in practice. So if those two
6 results similar and we can consider it's validated.

7 Q. And is simulation used in contexts other than elections?

8 A. Simulations well used everywhere almost. Very popular
9 in healthcare, very popular in military applications and very
10 popular in engineering. I think it's very popular.

11 Q. Has the accuracy of simulation been tested with
12 real-world data in those contexts?

13 A. Yes. Especially for war simulation they have to be very
14 accurate. And my adviser, he is we call simulation guru right
15 now. Top guy, simulation guy in the world. And he did some
16 work in military applications. And I think that's very
17 accurate.

18 Q. And has simulation proven to be a reliable technique?

19 A. Yes.

20 Q. Have you written about the use of simulation in the
21 election context?

22 A. You mean simulation -- used to build up my model?

23 Q. Yes. Have you written about the use of simulation to
24 predict wait times for elections?

25 A. Yes.

1 Q. And can you explain what you've written about that just
2 at a high level?

3 A. So especially when I prepare my first academic journal
4 paper about simulations on voting, we read multiple literatures
5 applying simulation to study voting lines. So many, including
6 Ted Allen, and he also use simulation study election lines as
7 well. And of course I also read some papers that use queuing
8 models to study waiting lines on election day.

9 Q. Are you familiar with the literature regarding wait
10 times to vote in Ohio specifically?

11 A. Yes.

12 Q. And, first of all, why does Ohio have a literature --
13 why is there a literature about wait times to vote if Ohio
14 specifically?

15 A. I think it started in 2004. That's the first time Ohio
16 utilized the DRE voting machines and then at that time the
17 number of machines was underestimated so have such long lines.
18 So Ohio made very big news and that's why, and people start to
19 study why Ohio has such lines in 2004.

20 Q. And I'm going to ask Ms. Schultz to bring up Plaintiffs'
21 Exhibit 113 on the screen. In one of the black books in front
22 of you it's document number 113.

23 MR. KAUL: May I approach, Your Honor?

24 THE COURT: You may.

25

1 BY MR. KAUL:

2 Q. Does 113 appear to be a copy of your expert report in
3 this case?

4 A. Yes.

5 Q. Let me direct your attention to page 5, I'm sorry, the 5
6 in the report. This contains a review of the -- some of the
7 literature from Ohio wait-times analysis, correct?

8 A. Yes.

9 Q. I'm not going to go through everything in here but I do
10 want to note a few points. First, in the second paragraph you
11 discuss a finding by Mebane in 2006?

12 A. Yes.

13 Q. What did he find?

14 A. He found the allocation of the voting machines in
15 Franklin County was biased.

16 Q. What do you mean by that?

17 A. He says biased is saying that the machines for
18 African-American communities got fewer machines than the other
19 communities.

20 Q. And at the beginning of that paragraph you indicate that
21 voters in Franklin County, according to literature, waited ten
22 hours to vote; is that right?

23 A. Yes. That's a news article.

24 Q. And Tanner identified the cause for that; is that right?

25 A. Yes.

1 Q. And what was that?

2 A. There's an insufficient -- not enough machines.

3 Q. Let me turn to the next paragraph. About halfway
4 through you discuss the 2008 Survey of the Performance of
5 American Elections?

6 A. Yes.

7 Q. And do you know who conducts that survey?

8 A. Hold on. Which -- in 2008 survey?

9 Q. Yes.

10 A. That's the -- I don't know how to pronounce that name.
11 Alvarez.

12 Q. Is that considered a leading study?

13 A. I think so. I believe so. Otherwise I will not cite
14 it.

15 Q. Did it find -- make an estimate as to the number of
16 voters who were deterred from voting in 2008 because of long
17 lines?

18 A. Yes. That's also from that report.

19 Q. And what did they indicate?

20 A. They're saying about 1.7 percent of voters.

21 Q. And that equals about 2.6 million?

22 A. Yes. Roughly.

23 Q. Let's move ahead then to the simulation you provided --
24 you performed in this case.

25 A. Okay.

1 Q. First, did you prepare a model for this case?

2 A. The model I used was the same model I use in my previous
3 published journal papers.

4 Q. And what were the key inputs for your simulation model?

5 A. So the key input is, one, number of machines assigned to
6 the location and, second, the number of voters that will show
7 up on that day. And another one is the voters' arrival
8 patterns.

9 So we all know voter do not arrive stationary -- in a
10 stationary manner during the day. So it's usually it's a peak
11 in the morning and also a peak afternoon about four or five
12 o'clock. And the rest of the day is kind of low -- is low
13 period. So I'm using this I call it two peak arrival patterns.
14 I use this in my simulation model as well. And also I need the
15 time, the how long it takes a voter to finish a ballot, I need
16 the time distribution on that as well.

17 Q. So let me just go through those quickly. The time to
18 vote, how did you determine what the expected time to vote was?

19 A. I rely on the data that collected by a mock election by
20 Ted Allen.

21 Q. What did he find that the average time to vote was here
22 in Ohio?

23 A. He used a sample ballot with six issues. And based on
24 the raw data, the average is about six minutes.

25 Q. And did he use a different average in his work in this

1 case?

2 A. In his report, yes, he used 7.5 minutes.

3 Q. And if you had used 7.5 instead of 6 minutes in your
4 calculations, what effect would that have had on your expected
5 wait times?

6 A. The expected wait time will be longer than what I have
7 right now.

8 Q. And you said the arrival pattern was based on two peaks?

9 A. Yes.

10 Q. And is that based on empirical study?

11 A. Yes. Especially I recently found that study in 2010 by
12 Spencer. I believe that is the study. And they did a field
13 study in California and they found a two-peak arrival pattern.

14 Q. And how did you estimate the number of -- you said the
15 number of voters. Is that the number of election-day voters?

16 A. Yeah.

17 Q. How did you estimate that?

18 A. So, for in my report because I need some basic
19 information, and I used 2012, the voter turnout rate in Ohio.

20 Q. So you used the election day turnout rate for 2012?

21 A. Yes.

22 Q. For the number of machines, how did you determine the
23 number of machines to use in your analysis?

24 A. So I used one machine for every 175 voters.

25 Q. What is that number based on?

1 A. This is what Ohio, the law says. One to every 175.

2 Q. And in making that calculation did you subtract from the
3 1 to 175 the number of registered voters?

4 A. Subtract what?

5 Q. Did you take the number of registered voters out of the
6 formula?

7 A. So let's say -- like, say, for one precinct has 1,000
8 registered voters, I use 1,000 divided by 175 and that's how I
9 determined the number of machines.

10 Q. And let's pull up table 1 on page 8. Here there is a
11 table showing three columns. The second one says number of DRE
12 machines before S.B. 200 and the second says number of DRE
13 machines under S.B. 200. What explains the difference?

14 A. The S.B. 200 is law says we need to -- when we calculate
15 the number of machines we need to remove the early voters. So
16 that's what S.B. 200, in my understanding. So I want to
17 compare the effect of that change. So the second column, the
18 number of DREs before S.B. 200, that's the number of machines
19 calculated based on the number of registered voters.

20 So, for example, let's say the last line, 5,000, so I
21 use 5,000 divided by 175 and then the number will be rounded to
22 the nearest integer and that's 29. So the first smallest
23 precinct, 300, because there's rules. The minimum number of
24 machines in each county has to be at least three. So that's a
25 result in three.

1 Q. Now, a couple of questions about this. First, is this
2 based on Franklin County?

3 A. Those precincts I have on table 1 is I just create a
4 realistic representative polling station as the examples for
5 illustration purpose. It's not refer to any specific precinct.

6 Q. Have you learned during the course of the case of
7 information about Franklin County's expected use of DREs?

8 A. Yeah. I know of Franklin County using DRE voting
9 machines.

10 Q. Do you know any information of how many they plan to
11 use?

12 A. I know in 2008 they use about 4600 -- 4600 machines in
13 2006.

14 Q. 2016?

15 THE COURT: Which year, I'm sorry?

16 THE WITNESS: I'm sorry, in 2008.

17 BY MR. KAUL:

18 Q. 2008. Earlier you referred to this as a minimum?

19 A. Yes.

20 Q. What do you mean by that?

21 A. A minimum is the precinct or the county can have more
22 than what this number -- so basically if the minimum is five,
23 they can have five or they can have ten or whatever they can
24 have.

25 Q. So what this chart illustrates is the numbers if we were

1 at the minimums?

2 A. Yes.

3 Q. Now, if a county exceeds the minimum from before S.B.
4 200, what effect would the new minimum law have then?

5 A. So if they still keep the same amount of machines, I
6 don't think there going to be effect.

7 Q. Would the change in minimum have any benefit to the
8 jurisdictions?

9 A. I don't -- unless they decide to discard some machines.
10 Otherwise it won't affect them.

11 Q. So if counties go below the old minimum but stay above
12 the current minimum, how will the numbers compare with these?

13 A. So because all my waiting lines estimation is based on
14 them using the new minimum number of machines. So if what they
15 actually used on election day is more than the new minimum,
16 less than what the old minimum, the wait time will be longer
17 than what happened before but will be shorter than what I
18 reported in my analysis.

19 Q. Did you do multiple scenarios of your analysis?

20 A. Yes, I did.

21 Q. Can you explain what the first scenario evaluates?

22 A. The first scenario I did is I just say keep all the
23 others unchanged, just use the minimum number of the -- the new
24 minimum number of voting machines and what the wait time would
25 be.

1 Q. So you ran a simulation -- first of all, did you do a
2 simulation to estimate that?

3 A. Yes.

4 Q. And that was assuming that the counties had the new
5 minimum number?

6 A. That's correct.

7 Q. And did you see how that compared to counties that were
8 at the old minimum?

9 A. Yes.

10 MR. KAUL: Can we bring up table 2 on page 10, please.

11 BY MR. KAUL:

12 Q. This table has several columns, right?

13 A. Correct.

14 Q. And the first is polling station size, which I think
15 speaks for itself, right? The next column is average wait?

16 A. Correct.

17 Q. And what does average wait mean?

18 A. The average wait is, for example, we have 1,000 voters
19 and each one has its own wait time and average wait will add
20 everything up and divide by a number of voters. And of course
21 I need to run my simulation, multiple replications, and I will
22 take the average across all my replications.

23 Q. And what are 70th and 90th wait?

24 A. We call it a percentile waiting. And the interpretation
25 will be the 70th wait is about 70 percent of the voters and

1 they wait, at most, this amount of time. And so equivalent you
2 can say approximately about 30 percent of voters will wait more
3 than this amount.

4 Q. And 90th is the same thing?

5 A. Yes.

6 Q. And what's max wait?

7 A. Max wait is what I reported here is expected maximum
8 wait. So, for example, I run my simulation and I know from all
9 these voters who waited the longest and I have that number and
10 I run multiple replications. I take the average of that max in
11 each replication. And the average is the -- reported in the
12 column.

13 Q. So before S.B. 200, in the average column, as you go
14 down there's, except for the first step from 300 to 1,000,
15 there's a slight decrease as the precincts get bigger?

16 A. Correct.

17 Q. Why does that happen?

18 A. I think it's because of the pooling effect of the
19 servers.

20 Q. What is a pooling effect?

21 A. So in our queuing theories that's basically saying if
22 you have a fixed number of total servers, in our case would be
23 fixed number of total machines, if it would be better to put
24 them all together in one location than if you divide them into
25 multiple locations.

1 Q. And now let's look at average wait after S.B. 200.

2 There the numbers increase as the precincts get bigger, right?

3 A. Correct.

4 Q. Why would that happen in light of the pooling effect you
5 just mentioned?

6 A. That is actually very interesting results. So based on
7 my past study and we find that especially for election -- the
8 voting lines on election day, because of the nonstationary
9 arrivals and because of the nonsteady state queues and the
10 pooling effect is not as big as what we thought. Especially
11 for the nonstationary arrivals, they have more effect than we
12 thought. So overall, the pooling effect got decreased when the
13 precinct is large or when the other factors, such as
14 nonstationary arrivals, plays into that.

15 Q. And in the 300 row, if you look at the two charts, those
16 are the same in both, right?

17 A. Correct.

18 Q. And why is that?

19 A. Because they have the same number of voting machines.
20 Three machines.

21 Q. In all other rows, your chart shows an increase in wait
22 time, right?

23 A. Yes.

24 Q. And let's just take one example, the 90th percentile
25 wait.

1 A. Okay.

2 Q. Before S.B. 200 you have wait times in precincts from
3 1,000 to 5,000 of between 24 and 28 minutes; is that right?

4 A. Yes. Correct.

5 Q. And after S.B. 200 you indicate that approximately ten
6 percent of voters in precincts, 1,000 to 5,000 are going to
7 wait over 40 to about 64 and a half minutes; is that right?

8 A. Correct.

9 Q. If the number of DREs is decreased below the minimum,
10 the S.B. 200 minimum but doesn't go as low as the post S.B. 200
11 minimum, what type of results will we see?

12 A. So if the number of machines is below the previous and
13 above the new minimum, I would say for the 5,000 registered
14 voter sizes polling locations the wait -- the 90th percentile
15 waiting or I can say the ten percent -- about ten percent of
16 the voters, they will wait less than 60 minutes, more than 20,
17 24, 26 minutes.

18 Q. So somewhere between the two?

19 A. Yes.

20 Q. Let's turn to scenario two. Can you explain what that
21 is?

22 A. Scenario two I just want to see if I keep all the
23 others, including the number of machines not changed and I just
24 change the arrivals on election day what would be the effect.

25 Q. And why were you assessing a potential change in

1 arrivals on election day?

2 A. Because according to the new law, S.B. 238, which
3 eliminates the golden week, and also S.B. 205, which make some
4 additional restrictions on early voting. So I think some
5 voters which would vote during the early-voting time period
6 might go to vote on election day instead. So if that happens,
7 the voter arrivals will be increased on election day.

8 Q. And is it your understanding that S.B. 238 eliminated
9 golden week?

10 A. Yeah.

11 Q. And if it hadn't, is it your opinion that some voters
12 would have voted during that week?

13 A. Yes.

14 Q. And what will those voters do instead?

15 A. So they have three possibilities. They have to go
16 somewhere. One is they do not vote at all or they may vote in
17 the rest of the early-voting time period or they have to vote
18 on election day instead.

19 Q. If they vote in the rest of the early-voting period,
20 what effect will it have on lines during early voting?

21 A. So for the rest of the -- so basically we have the voter
22 arrivals for the rest of early-voting time periods will be
23 increased.

24 Q. And what effect does increased arrivals have on wait
25 time?

1 A. So according to our queuing insights if more arrivals
2 will result in longer wait time.

3 Q. But you examined more arrivals on election day, right?

4 A. Yes. I just examined the increase on election day.

5 Q. And what scenarios did you consider here?

6 A. I considered three scenarios. So because I do not have
7 the data on how many of the voters will vote on election day
8 instead. So I have to create a range and I just basically
9 create a ruler and I present the entire scenario. Once you
10 know how many people will vote on election day instead,
11 according to what I present, you will find out the
12 corresponding effect.

13 So the range I chose is, one, is I chose about 5 percent
14 of those potentially could be affected voters will go to vote
15 on election day instead and also 16 percent and 45 percent.

16 Q. And when you say 5 percent, 16 percent and what was the
17 last one?

18 A. Forty-five.

19 Q. That's percent of what?

20 A. Percent of the total possibly-affected voters. So
21 basically I made in one estimation I said the voters who voted
22 during the golden week and also the voters voted during the
23 early-voting time period. So based on my estimation it's about
24 16 or 17 percent.

25 Q. And when you say voted during the early-voting time

1 period, do you mean by absentee ballot?

2 A. Yes.

3 Q. So 5 percent of those people, what does that equate to
4 in an increase in election-day turnout?

5 A. Five percent of the 16.9 percent is about less than
6 one percent of the total registered voters.

7 Q. And the other numbers correspond with the same math?

8 A. Yeah. So 16 percent of that 16.9 percent is about less
9 than three percent of the total registered voters.

10 Q. And let's pull up table figure 2 on page 14. First of
11 all, is this a simulation or does this contain simulation
12 results --

13 A. Yes.

14 Q. -- from scenario two?

15 A. Yes.

16 Q. And I personally find this a little bit confusing. So
17 let me go through this with you. Let's just take the bottom
18 left as an example.

19 A. Okay.

20 Q. The same idea applies to each of these, right?

21 A. Right.

22 Q. So can you walk us through what each of these lines
23 shows?

24 A. The chart, the Y is the wait time and X is the turnout
25 rate on election day. And they start with 14 -- 47.2 percent.

1 That's what happened -- the turnout rate in 2012.

2 Q. So that's the dot on the far left?

3 A. Yes. All the four dots. And the four dots we have four
4 colors. The blue color represents the average wait time, the
5 red is the 70th percentile wait time and the green one is 90
6 percentile wait time and the purple one is the maximum wait
7 time.

8 Q. Okay. So just following the blue line, so going from
9 the --

10 THE COURT: For those of us in black and white, which
11 ones are which?

12 MR. KAUL: I'm sorry, Your Honor, it's on the screen.
13 I'm not sure if it's showing up in color.

14 BY MR. KAUL:

15 Q. Can you walk us through the blue line?

16 A. The blue one is the average wait time. The first dot,
17 basically the 47.2 percent turnout rate end at almost zero
18 minute of waiting on average. And if we increase to about
19 48 percent, that's jumped to roughly six percent -- six minutes
20 of waiting.

21 Q. And that's the second dot from the left?

22 A. Second dot. And then increasing as the turnout rates
23 increase.

24 Q. Okay. So how would you characterize, overall, the
25 effect of these different types of potential increases in

1 election-day turnout?

2 A. So if this chart is for the precinct with 4,000 total
3 registered voters and the turnout rate is accurate according to
4 the four scenarios, so it's just as what we expected. The more
5 people turn out, the higher -- the more -- the longer wait time
6 it will be. And in terms of the magnitude, how many minutes
7 more will be the wait time going to be. You can see from the Y
8 axis.

9 Q. Let's talk about scenario three then. What did you do
10 for scenario three?

11 A. Scenario three, what I did is because scenario one and
12 two will just evaluate one change at a time and in scenario
13 three I evaluated the two changes if we change two changes at
14 the same time and what would be the effect.

15 Q. So you're basically combining one and two?

16 A. Correct.

17 Q. Let's bring up page 18, figure 3. Why don't we do the
18 bottom left again. So is this the same type of analysis that
19 the last chart showed?

20 A. Right. For same size, 4,000 total registered voters.

21 Q. And these are showing expected wait times with counties
22 at the DRE minimum and showing the different types of potential
23 increases in election-day turnout?

24 A. Correct.

25 Q. And do we follow this chart the same way as the other

1 one?

2 A. Yes. Same X and Y axis. Same colors, same setup.

3 MR. KAUL: Your Honor, in the interest of time, I'm
4 inclined not to go through this unless the Court has questions
5 about these.

6 BY MR. KAUL:

7 Q. Did you then, in your report, discuss the number of DREs
8 that would be necessary to ensure that voters don't wait for 30
9 minutes?

10 A. Yes, I did. I did extra section on this.

11 Q. First of all, why did you use that metric?

12 A. Because I guess how to define a long wait time is always
13 a question. And the reason I think this problem, this standard
14 is being established and the presidential committee on election
15 administration and they reached a conclusion saying, okay,
16 let's say 30 minutes. Anyone waiting for more than 30 minutes
17 will be considered a long wait. And we shouldn't have anyone
18 waiting for more than 30 minutes. In addition to that, there's
19 like South Dakota and New York, they have the laws to say the
20 wait time should be less than 30 minutes.

21 Q. So did you assess how many DREs counties would need to
22 have to prevent voters from having to wait 30 minutes?

23 A. Yes, I did.

24 Q. What did you find?

25 A. What I found is I just give one small example. The

1 example is if the turnout rate is 14 -- 47.2 percent and if the
2 average wait time for voter to finish one ballot is six
3 minutes, if that is true and if we want to have no one expected
4 to wait more than 30 minutes, the DRE ratio should be one DRE
5 machine for every 118 registered voters.

6 Q. How many actual turnout voters does that equate to?

7 A. So 56. 118 times 47.2 percent.

8 Q. Now, that would require counties in Ohio to increase
9 their number of DREs, right?

10 A. Yes. If they want to make sure no one wait for more
11 than 30 minutes that's the number of machines I believe they
12 should have.

13 Q. Next let's take a look at Plaintiffs' Exhibit 114. It
14 should be the next tab in your book. Can you take a look at
15 that document? Do you recognize that as your expert rebuttal
16 report?

17 A. Yes.

18 Q. Now, in this report were you asked to respond to Ted
19 Allen's report?

20 A. Yes. That's correct.

21 Q. You talked before about using simulation, right?

22 A. Yes.

23 Q. What method did Dr. Allen use to derive his expected
24 wait times?

25 A. He used MMCQ formula.

1 Q. What does that mean?

2 A. That's a close form queuing formula. So the M stands
3 for Markovian. So that's basically our terminology. That's
4 basically saying the arrival follows a Poisson process and
5 service rate follows expediential distribution and C is the
6 number of servers. Multiple servers queue.

7 Q. Are there reasons that you believe that using that type
8 of model is not appropriate in the elections context?

9 A. Well, I believe MMCQ is very questionable to use in
10 voting context.

11 Q. And can you explain why?

12 A. So what I said MMCQ they have very strong assumptions.
13 So one assumption is for arrival patterns they assume the
14 arrival of the customers or voters has to be arrival in a
15 stationary manner which is not true in reality. And the second
16 assumption is they assume the service time, which is how long
17 it takes a voter to cast a ballot follows the expediential
18 distribution. And expediential distribution is widely used in
19 academia world, especially for close formula. The reason is
20 very good mathematical property to derive something. But it
21 doesn't match the reality.

22 Q. And in a expediential model, that's like when you've got
23 on the Y axis it approaches zero?

24 A. Yes.

25 Q. And it comes down and approaches --

1 A. Right.

2 Q. -- infinity in the X axis?

3 A. Yes.

4 Q. What does that show the most common voter use of machine
5 time to be?

6 A. So expediential distribution, the mode for that
7 distribution is zero. So basically translating into our voting
8 context, that assumes most of the voters will cast their ballot
9 as they need zero minute.

10 Q. And was there a third issue?

11 A. A third issue is the queuing formula, the MMCQ he used.
12 It studied the steady state queues, but the election day queue
13 I doubt it is steady state.

14 Q. And just to be clear, what does steady state mean?

15 A. Steady state means when time goes to infinity, the
16 voting system have to run forever. It goes to infinity. And
17 also when the arrival rates equals the departure rates. And
18 that is the state we call steady state.

19 Q. So, for instance, if a voting location were to have a
20 line before it opened, would that be accounted for in that type
21 of the MMCQ model?

22 A. MMCQ does not study that. So those -- because running
23 for the time go to infinity so MMCQ just study when the time
24 goes to infinity, what's the queue behavior after that.

25 Q. And what's the issue with having assumptions that are

1 not consistent with the reality?

2 A. Well, if the assumption does not or do not apply to
3 reality of what is calculated based on the formula does not
4 represent reality.

5 Q. You also discuss early-voting locations in your rebuttal
6 report?

7 A. Right.

8 Q. What, if any, critiques did you have of Dr. Allen's
9 report with respect to early-voting locations?

10 A. If I remember right, Dr. Allen argues that one location
11 will be better than multiple locations and his results based on
12 the wait time. So given the fixed number of resources and
13 according to the pooling effect if we have all resources into
14 one location, we'll have a better result than multiple
15 locations in terms of wait time. But what I argued is, which
16 is true for wait time, but wait time is only one factor. There
17 are some other factors that cannot be ignored when we compare
18 if one location is better than the multiple locations or not.

19 Q. And what are those factors?

20 A. The one I suggest we need -- we cannot ignore is the
21 travel time. So if we ignore the travel time, the result could
22 be absurd. For example, if I used Ted Allen's reasoning and
23 one location is better than multiple locations, so then I will
24 say for the entire state of Ohio we can have one location on
25 election day because of the pooling effect or even for the

1 entire United States on election day we should have one
2 location rather than multiple locations.

3 Q. And you're saying that's where the logic leads you if
4 you only consider --

5 A. Yes. If we only consider the wait time because we
6 ignore the travel time and other factors. If you factor those
7 in, you will not reach this conclusion.

8 Q. And what other factors do you think are relevant besides
9 travel time?

10 A. I think to me, for example, if you have one location
11 serve a lot of people, you need to have a large facility and
12 you also need to have a large parking lot. Otherwise people
13 cannot find spot to park their car and they have to stand
14 outside. And so many people standing outside and that's also
15 not very good.

16 Q. And is part of your work, does it require you to make
17 judgments about how different election regimes are likely to
18 have -- what their arrival rates are likely to be?

19 A. Yes.

20 Q. And let me direct your attention to page 5 of your
21 report, the first full paragraph. Do you, in your report,
22 review literature that relates to early-voting locations?

23 A. Early voting because this is part of the problems I
24 study so I have to -- so I read these things as my background
25 knowledge for this particular problem.

1 Q. And what did you find in the literature?

2 A. The literature says the location matters. And also the
3 location might impact the voter turnout.

4 Q. And when you say location matters or might impact, what
5 do you mean?

6 A. So if the location is too far from the voters then some
7 voters may not vote because it's inconvenient.

8 Q. And then last --

9 MS. PIERCE: Objection, Your Honor. To the extent
10 Dr. Yang is offering an opinion about the deterrent effects of
11 early-vote-center placement or long lines or anything like
12 that, that's outside the scope of his expertise.

13 THE COURT: What's the last sentence of that second
14 full paragraph address?

15 MR. KAUL: The last sentence.

16 THE COURT: So Washoe County, Nevada seeks to make
17 sure that no voter's more than three miles from an early-voting
18 center. Does that have no bearing on his opinion or does it
19 have some bearing on his opinion?

20 MR. KAUL: He was talking about factors that -- well,
21 I can ask him.

22 THE COURT: Yes.

23 BY MR. KAUL:

24 Q. You were explaining before why you don't just consider
25 the pooling effects of resources in making operations

1 determinations about how to set up queue systems, right?

2 A. Right.

3 Q. And were you describing other factors that are relevant
4 to deciding what the appropriate queuing system is?

5 A. Yes. Because if we are considering the time and I think
6 the wait time -- once you arrive to the polling station, the
7 wait time is one of the factors. We also need to consider the
8 time the voter spent driving or walking from where they are to
9 the polling stations.

10 Q. And in designing a model for queuing, do other factors
11 besides just the wait time come into play?

12 A. So I say, yes. As what I said for the parking lot, for
13 example, usually this is not an issue. But if we have so many
14 people, the parking lot could be potentially the bottleneck
15 rather than the machines. If that happens, the whole thing
16 will be different. So I do think about that as well.

17 Q. And is making sure that more people can vote a factor
18 that you would consider?

19 A. Is what?

20 Q. Is making sure that more people can vote, if possible, a
21 factor that you consider?

22 A. Yes. The because turnout rate is an important part in
23 my model.

24 Q. Let me ask you about your conclusions with respect to
25 the number of DREs. You addressed Dr. Allen's analysis of the

1 change to the DRE formula?

2 A. Right.

3 Q. Can you explain what your conclusions are?

4 A. The DRE formula, I think for one for every 175, the
5 formula itself, I don't believe is the right formula. And
6 Dr. Allen says, I think his word says is, a qualitative closer
7 to an ideal provisioning approach.

8 Q. Just for the record, he says it's qualitatively closer?

9 A. Yes. And because I think it is correct, when we want to
10 make the formula more accurate, we should only consider the
11 voters that is going to vote on election day. So I think that
12 is -- that's why I think he said a qualitative closer and I
13 also agree with that. But the problem is, the 175 is also part
14 of the formula. If we want to make this formula correct, we
15 have to change the denominator and numerator at the same time.
16 We just cannot change one and not change the other. Otherwise,
17 it could result in even worse result.

18 Q. And so when you only change one and not the other,
19 what's the effect going to be?

20 A. So if we just -- if we keep 175 unchanged, just make the
21 numerator smaller because we are removing the number of
22 absentee voters in that formula, if we just do that, it will
23 result in smaller number and that will be smaller number of
24 voting machines.

25 Q. And what effect will that have on lines?

1 A. The lines will be longer.

2 Q. And then last, you talk in your analysis about average
3 wait time 70th percentile and 90th percentile and maximum?

4 A. Right.

5 Q. Does Dr. Allen consider all those things?

6 A. No. Because queuing formula does not have that power to
7 evaluate such wait time.

8 Q. What does he consider?

9 A. Average wait time.

10 Q. And are there reasons that you think that's a mistake to
11 consider only average wait time?

12 A. I think if we just consider average wait time, it could
13 be misleading and the reason is so we can have a very small
14 average wait time, let's say five minutes or eight minutes, but
15 there's still going to be some -- very likely some voters will
16 experience such a long wait time.

17 Q. And do you know of examples of that in real elections?

18 A. Yes. And like I said, we also have Dr. Stewart's report
19 and he said -- the report I cited in my report. He said about
20 two-thirds of American voters in 2012 waited less than ten
21 minutes but we still have ten percent or more waiting for an
22 hour or more than 30 minutes, and three percent waited more
23 than an hour.

24 MR. KAUL: Thank you. No further questions.

25 THE COURT: Ms. Pierce, you may cross.

- - -

CROSS-EXAMINATION

BY MS. PIERCE:

Q. Good evening, Dr. Yang.

A. Good evening.

Q. I don't know if you remember me.

A. I remember you.

Q. My name is Sarah Pierce. I represent the defendants in this case, as you know. I just have some questions for you once again.

Dr. Yang, you mention that you are an assistant professor at the University of St. Thomas in Minneapolis, right?

A. Yes.

Q. How long have you been in that position?

A. I started my work since 2011.

Q. Have you obtained tenure?

A. I am going to apply in the summer.

Q. This is your first time offering expert testimony in a court; is that right?

A. Yes.

Q. So safe to say you have never been accepted by a court as an expert witness before --

A. No.

Q. -- to your knowledge?

1 A. Yes.

2 THE COURT: Welcome to your first time.

3 THE WITNESS: Thank you for having me.

4 THE COURT: My pleasure.

5 BY MS. PIERCE:

6 Q. You mention that you have collaborated with Dr. Allen on
7 research projects quite a bit; is that right?

8 A. Yes.

9 Q. Dr. Allen was actually on your Ph.D. committee; is that
10 right?

11 A. Correct.

12 Q. You've specifically collaborated with him on
13 voting-machine allocation projects?

14 A. Correct.

15 Q. And I hope you'll continue to collaborate with him in
16 the future, right?

17 A. We are still collaborating.

18 Q. I don't want to break up a professional relationship.

19 A. We will see.

20 Q. You're aware that Dr. Allen referred you to Plaintiffs'
21 counsel in this case, right?

22 A. Yeah.

23 Q. Let's take a look at your first report that we were
24 talking about earlier. You were asked to provide an opinion
25 about the impact of several laws on the amount of time that

1 Ohio voters will wait to cast a ballot on election day?

2 A. Can you say it? I'm sorry.

3 Q. You were asked to provide an opinion about the impact of
4 several laws on the amount of time Ohio voters will wait to
5 vote on election day?

6 A. Correct.

7 Q. So turning back to your first evaluation scenario in
8 your report that looks at the effects --

9 THE COURT: Rebuttal or the other one?

10 MS. PIERCE: The first report, Your Honor, the initial
11 report.

12 BY MS. PIERCE:

13 Q. There's an evaluation scenario one in there that looks
14 at the effects of S.B. 200; is that right? S.B. 200 is the law
15 that requires DRE counties in Ohio to have a certain minimum
16 number of DRE machines in their inventory, correct?

17 A. Correct.

18 Q. And that that minimum number takes out of the
19 registered-voter pool absentee voters, right?

20 A. If we consider the -- yes.

21 Q. And then requires counties to have a 1 to 175 ratio with
22 that?

23 A. (Nodding head.)

24 Q. Okay. And I believe you spoke on this already but you
25 are aware that that law sets a minimum number, correct?

1 A. Yes. That's correct.

2 Q. And you noted in your report that prior practice in Ohio
3 in DRE counties was to allocate one machine for every 175
4 voters. Is that mentioned in your report?

5 A. Which part can you show me?

6 Q. In your evaluation scenario one you mention that prior
7 practice in Ohio before S.B. 200 was to allocate DRE machines
8 at a 1 to 175 ratio?

9 A. Yes. I see that, yes.

10 Q. You didn't do any independent research to verify that
11 that was, in fact, prior practice in Ohio, correct?

12 A. Correct. So I just recently acknowledge in Franklin
13 County they do one DRE for 125.

14 Q. You didn't talk to any Ohio elections officials before
15 writing your report, right --

16 A. No.

17 Q. -- to confirm that that was, in fact, prior practice?
18 You didn't do that?

19 A. I didn't confirm that.

20 Q. You didn't make a request for that information, right?

21 A. No.

22 Q. You referred to Secretary of State advisory 2014-03 in
23 your report; is that right?

24 A. Right.

25 Q. That's the resource that gave you the minimum number of

1 DRE machines that are required for counties by S.B. 200, right?

2 A. Right.

3 Q. And you're aware that in that advisory the Secretary of
4 State ordered DRE counties not to get rid of any machines if
5 their minimum number had changed, right?

6 A. Yes.

7 Q. Did you note that in your report?

8 A. I didn't write this in my report because in my report it
9 just trying to evaluate if the minimum number of machines is
10 deployed what would happen.

11 Q. And again, that's the minimum number of machines?

12 A. That's correct.

13 Q. And you didn't do any research to confirm that that was,
14 in fact, the reality in Ohio, right?

15 A. Well, the reality, I think the reality, at least for
16 now, they have more machines than the minimum numbers. So the
17 wait time will be shorter than what I reported. But over the
18 long run because of the law here I don't know if they plan to
19 replace some old machines or not over the time. As of right
20 now I think we already had some long-line problems happening
21 before so and also we know the machines right now is about 10
22 to 15 years old and they are almost at their life span. So I
23 don't know if the election officials plan to fix that over the
24 time also of trying to buy new machines to replace this.

25 So if they don't do this over the long time I think they

1 may have fewer and fewer available working machines. So that's
2 my concern. So that's why I'm saying probably not now but what
3 if you have somehow reached the minimum number requirement and
4 then that would happen, that would be a very bad result.

5 Q. Okay. Let's break that down a little bit. You
6 mentioned long lines in the past. And I think you mentioned
7 during your direct examination that 2004 was the first time
8 Ohio used DRE machines. Do you remember saying that in your
9 direct?

10 A. That's the news. I know in 2002 we have the law pass
11 and in 2004 it was the first election, general election that
12 used.

13 Q. What law are you referring to?

14 A. What?

15 Q. What law?

16 A. HAVA.

17 Q. You're aware that there were counties in Ohio using DRE
18 machines before 2004?

19 A. Right now I cannot recall exactly but I think they might
20 be true after 2002, yes.

21 Q. You mentioned on your direct an article written by
22 Professor Mebane, Dr. Mebane?

23 A. Yes.

24 Q. An article published in 2006 and long lines in Franklin
25 County in 2004. Are you aware in Franklin County in 2004, the

1 county was not using DRE machines at that time?

2 A. I don't know. I just read Professor Mebane's article
3 and he's a well-known professor so I trust his opinion.

4 Q. We heard some testimony earlier this week that Franklin
5 County did not, in fact, use DRE machines in 2004. Were you
6 aware of that?

7 A. I don't know. I thought they had 2,000 some machines
8 used in 2004.

9 Q. You are aware that after the 2004 election Ohio
10 instituted no-fault absentee voting, right?

11 A. Right.

12 Q. You're also aware that the United States Department of
13 Justice investigated the long lines in Franklin County in 2004,
14 right?

15 A. That's correct.

16 Q. Are you aware of the results of that investigation?

17 A. I think -- I remember I read some result. I think I
18 cannot recall exactly but if I say I probably make a mistake.
19 I will let you speak.

20 Q. Okay. So let's turn to the second part of what you said
21 about aging machines. You didn't do any research to determine
22 DRE machine failure rates in Ohio, did you?

23 A. Well, I used the failure -- machine failure rates in my
24 other published articles. I have the data reported by the
25 manufacturers.

1 Q. Did you report that data in your report here?

2 A. No. Because I said for here I didn't -- I have a note
3 on my report. I said all the calculation here did not consider
4 machine failures. If I do, the wait times will be longer than
5 what I reported.

6 Q. Do you know how Ohio DRE counties maintain their DRE
7 machines?

8 A. What do you mean by maintain? Saying when they store,
9 how they store.

10 Q. How they keep them running in efficient manner?

11 A. I don't know what exactly they do on election day on
12 those.

13 Q. You don't know if Ohio DRE counties have any policies
14 for dealing with machine failures on election day like, for
15 example, backup paper ballots?

16 A. I know that but I don't know how they implement it. I
17 know they have this option.

18 Q. So you are aware that DRE counties have backup measures
19 for dealing with long lines caused by machine failures on
20 election day, you are aware of that?

21 A. Yes. I heard of that but I don't know how they actually
22 do this. Like how to do this, how to, yes, but I don't know
23 the details about that.

24 Q. Is that noted anywhere in your report?

25 A. No.

1 Q. So in running your first evaluation scenario and all of
2 the results in your table 2, those are all based on that
3 minimum number of DRE machines --

4 A. Which table?

5 Q. Table 2.

6 A. Yes. All based on minimum number of machine.

7 Q. You're not aware of any counties that are actually
8 actively getting rid of DRE machines, right?

9 A. I don't know which county. I heard some county might
10 try to use optical scan or some other possibilities. I don't
11 know which one.

12 Q. So they would --

13 A. I think I read from article. I don't recall exactly.

14 Q. So you've heard that some counties may move to another
15 system of voting but have you heard of DRE counties getting rid
16 of DRE machines?

17 A. I do not know that.

18 Q. And you're not aware of any counties that plan to only
19 use the minimum number of DRE machines in the future, right?

20 A. Yes. I do not know that. So let's go back to the
21 previous question I said right now they have more than -- what
22 they had is exceeding the minimum number of machines. My
23 worries over the long time so basically they're allowed, by
24 law, to have a fewer number of machines. That's my concern. I
25 think let me make not very good analogy.

1 So let's say we suddenly remove the law says if you
2 steal, it's okay. It doesn't mean everybody will go steal
3 things. But what the concern is, the steal is okay. Somebody
4 steals. So you know what I'm saying? So that's basically my
5 concern.

6 Q. But you don't actually know and didn't do any research
7 to confirm that any counties in the past or in the future will
8 operate at that minimum number of DRE machines, did you?

9 A. What I said, I think I don't know. I hope they don't
10 use the minimum number of machines.

11 Q. And what is your understanding of Plaintiffs' claims in
12 this case as it relates to the DRE minimum?

13 A. Can you say the question one more time?

14 Q. What is your understanding of what Plaintiffs are asking
15 for in this case when it comes to that DRE machine ratio?

16 A. So you ask what they want me to say or what they ask me
17 to offer an opinion?

18 Q. What do they want out of this lawsuit, to your
19 understanding?

20 A. To my understanding, they want me to evaluate the effect
21 of this loss.

22 Q. Do they want to go back to the old law, the 1 to 175
23 that has the absentee numbers?

24 A. I was not asked -- I do not know what they want to do.
25 I just -- they just ask me to evaluate what if this happened

1 and what the possibility -- possible consequence is.

2 Q. Okay. So let's move on to your second evaluation
3 scenario. In this scenario you examined the effects of S.B.
4 205 and S.B. 238, right? Your second evaluation.

5 A. Yes. I found it.

6 Q. S.B. 238 is the law that moved early voting back a week,
7 right?

8 A. Yeah.

9 Q. And S.B. 205 made some changes to absentee balloting?

10 A. Yeah.

11 Q. Now, you concluded that those laws would make it more
12 difficult to vote early, right?

13 A. Right.

14 Q. And for some voters to vote on election day instead,
15 right?

16 A. That's possible. Possible.

17 Q. But that is your personal opinion, right, that those
18 laws would make it more difficult to vote early?

19 A. Well, I think it's just based on our common sense.
20 Before, you have one more week, golden week. You can register
21 and vote same day. Right now this time period is gone so I
22 think it's fair to say that it becomes more difficult.

23 Q. But that personal opinion is not based on any empirical
24 analysis, is it?

25 A. No.

1 Q. And you didn't consider any literature in forming that
2 personal opinion?

3 A. I think it's quite obvious comparisons. I don't think
4 we need any literature. I think unless you say it's easier
5 than before, I think that one you need some literature to back
6 up your argument.

7 Q. Do you have a degree in political science, Dr. Yang?

8 A. You mean education degree?

9 Q. Yeah. A degree, like master's?

10 A. No.

11 Q. Any specialization in voter behavior or anything like
12 that?

13 A. No.

14 Q. You did approximate that the number of people who voted
15 early before the changes in the law accounted for about
16 16.9 percent --

17 A. Right.

18 Q. -- of the total turnout rate.

19 A. Yes.

20 Q. And you calculated that figure by combining the
21 percentage of people who voted during golden week in Franklin
22 County in 2008, combining that with the statewide percentage of
23 absentee ballots in 2012, right?

24 A. Yes.

25 Q. That, in a word, is an estimation, correct?

1 A. That's the best available data to me at that time and
2 that's the best estimate I can make. The goal to do this I
3 just want to know roughly what's the total number of person,
4 what voter could be affected by this.

5 Q. And you did that by combining data from 2008 and 2012?

6 A. I'm combining the ratio. I'm not combining exact
7 number.

8 Q. And by combining data about -- from Franklin County and
9 data from the state in its entirety, right?

10 A. Right.

11 Q. So based on your personal assumption that some voters
12 will move to election day after S.B. 238 and based on your
13 inexact estimation of early in-person turnout, you picked a few
14 scenarios to evaluate, right?

15 A. Right.

16 Q. So in those scenarios were the 5 percent, 16 percent and
17 45 percent of voters moving to election day?

18 A. Right.

19 Q. There was no scientific reason that you selected those
20 three numbers, right?

21 A. You are right. As what I said, because I don't know or
22 I don't have any studies to show me. I don't know the
23 percentage, the specific percentage of the voters who would
24 vote on election day instead. So I create a ruler, I just give
25 you a range. So this is what is going to be. Once you know

1 the percentage of voter who vote on election day instead, you
2 just compare to what I offered and you will know what the wait
3 time would be affected.

4 Q. But you don't know how likely any of those scenarios
5 are?

6 A. I do not know how likely.

7 Q. You didn't base those numbers on any particular
8 analysis, right?

9 A. Right. I just give you a broad range.

10 Q. And you didn't base those numbers on any published
11 literature, correct?

12 A. No.

13 Q. In fact, you didn't do any research into the 2016
14 early-voting calendar at all, correct?

15 A. 2016?

16 Q. 2016.

17 A. No.

18 Q. Even though you believe it would be relevant to the
19 analysis whether people moved to early voting versus election
20 day?

21 A. If I had the data I would love to have that but at the
22 time I don't have that.

23 Q. Did you ask anybody for the 2016 early-voting calendar?

24 A. I didn't ask specifically 2016, I just ask provide me
25 the best available data you have.

1 Q. In your third evaluation scenario in your first report
2 you combined your first two scenarios, right?

3 A. Right.

4 Q. But you're still assuming counties will use that minimum
5 number of DRE machines set by statute?

6 A. Right.

7 Q. Even though evidence suggests that counties regularly
8 exceed that minimum set by statute?

9 A. So the scenario three is trying to see we combine the
10 two scenarios. Still if the minimum number of machines used if
11 some voters voted on election day instead. I want to see the
12 two factors combined, what would be the consequences.

13 Q. So still assuming minimum number of machines?

14 A. Correct.

15 Q. And still assuming that some voters will move from early
16 voting to voting on election day?

17 A. Right.

18 Q. Based on all those criteria we just discussed?

19 A. Yes.

20 Q. So the new DRE law, I think we've covered this a little
21 bit by implication but that does not prevent a county from
22 having more DRE machines than the minimum, right?

23 A. It doesn't prevent, yes.

24 Q. And the law doesn't prevent a county from, for example,
25 using your very own simulation model to decide how best to

1 allocate those machines on election day, right?

2 A. Right.

3 Q. In your first report you also calculated the number of
4 DRE machines needed to ensure that no voter waits for more than
5 30 minutes to vote on election day?

6 A. That no voters expect to wait. That's very subtle but
7 very important word.

8 Q. And that's an important word because your simulation
9 model models reality, right?

10 A. Right.

11 Q. It doesn't necessarily predict what will actually happen
12 on that election day.

13 A. That's not the expect word here. The expect word what
14 I'm saying is because randomness, even if you have the same
15 setup, same voter arrival patterns, same number of machines
16 there and let's say the election day can happen the same thing
17 can happen many, many, many times like in parallel, whatever.
18 So like how long you are going to wait as an individual, the
19 wait time on this parallel election day will be different
20 because of randomness. And so the expected wait, maximum wait
21 time is I -- for each those election day I will see who waited
22 longest and record longest wait time. I have so many such
23 days, I take the average of the longest. I just want to make
24 sure the average of the longest is less than 30 minutes. So
25 it's possible for one realization still some voters may wait

1 over 30 minutes. But if voters can vote millions of times on
2 average is less than 30 minutes.

3 Q. I see. But my point is your simulation model has a
4 couple of inputs, right, arrival time?

5 A. Right.

6 Q. And it could predict a certain outcome on election day
7 given those factors, right?

8 A. Right.

9 Q. But on actual election day it could rain cats and dogs
10 and nobody shows up and we have more machines out there than we
11 anticipated people coming, right?

12 A. That's what I said randomness. Randomness. So no one
13 can control the randomness. It's the nature. God control the
14 randomness. So that's why. What we control is the max
15 expected.

16 Q. I think you said that your model contemplates a couple
17 of different inputs. Let me see if I can get that list. It's
18 arrival times, service times, actual voter turnout that day and
19 time to vote. Did I get them -- number of machines, number of
20 voters that day, voter arrival patterns and time to vote?

21 A. Right.

22 Q. Okay. Now this whole simulation model assumes that
23 there will be a bottleneck, a line developing at the DRE
24 machines, right?

25 A. Right.

1 Q. At the servers?

2 A. Correct.

3 Q. It does not incorporate a bottleneck developing
4 somewhere else in the voting system, right?

5 A. No.

6 Q. For example, at the check-in process?

7 A. So according to our basic process analysis knowledge and
8 for this type of voting process we have first you need to check
9 in and then you need to vote. So we basically have two
10 services. One is check-in services, the other is voting
11 services. Check-in services, that's the poll book, whatever,
12 how long you're going to take over there. Then we have two
13 process. The first check-in process, according to the
14 empirical data, is about one minute if we're using electronic
15 poll book. About two minutes long if you use the regular paper
16 poll book. On the voting machines how long to take the voter
17 to vote is four to eight minutes.

18 So according to the bottleneck or process analysis,
19 whoever is the longest or the slowest, that one is the
20 bottleneck. So based on the reality or based on the empirical
21 data we have so far and check-in is smaller or much faster than
22 each machine to process a voter. So, so far look at this
23 bottleneck is clearly the voting machines.

24 Q. We've heard testimony this week that at least in some
25 precincts in Franklin County in particular a bottleneck

1 developed at the check-in process such that machines were
2 underutilized. Were you aware of that?

3 A. I want to know how do they -- so I don't know what is
4 setted. So I want to ask you, how do they say the check-in is
5 the bottleneck? How do they make this judgment?

6 Q. I'm aging the questions here, sir.

7 A. Okay. That's important because if the check-in is
8 bottleneck, which means the check-in process is slower than the
9 machines, so basically the machine will -- in front of the
10 machine there will be no lines at all and all the lines is in
11 the check-in process.

12 Q. That's the scenario they encountered.

13 A. So if that case, then check-in will be the -- is the
14 bottleneck.

15 Q. And that's not reflected in your simulation model?

16 A. No. My simulation is based on DRE voting machines.

17 Q. Let's move back to this 30 minute benchmark. Can I call
18 it that?

19 A. Yeah.

20 Q. You base that 30 minute benchmark on a 2014 report
21 issued by the Presidential Commission on Election
22 Administration, right?

23 A. Right. On some others also consider 30 minutes.

24 Q. You're aware that the Secretary of State requires
25 counties, during some elections, to submit election

1 administration plans?

2 A. I don't know.

3 Q. So I'm guessing you're not aware that counties were
4 required to do this in advance of the 2014 election?

5 A. Submit the plan how they -- I don't know.

6 Q. For the 2014 election the Secretary of State provided a
7 required template that counties had to fill out. You're not
8 aware of that?

9 A. No.

10 Q. The template noted that the average wait times in Ohio
11 in 2012 were eleven minutes which is below the national
12 average. You're not aware of that?

13 A. Okay. Yes. I trust what you say.

14 Q. But the Secretary directed the counties to review any
15 polling places where, during the normal course of the day in
16 previous federal elections, nearly all voters were not able to
17 be processed within the PCEA suggested standard of 30 minutes
18 and further directed counties to, based on that analysis,
19 detail your plan for mitigating those wait times in 2014.

20 Were you aware of that?

21 A. No.

22 Q. In any event, S.B. 200 does not prevent counties from
23 using the 30 minutes as a benchmark in administering their
24 elections, does it?

25 A. It does not. I think to go back to my earlier analogy.

1 Q. And you don't know if any DRE counties in Ohio actually
2 have a 30-minute wait time standard, do you?

3 A. I do not know.

4 Q. You didn't seek out that information?

5 A. For what they actually -- as I said, I just ask for the
6 best available data to me and based on that, I didn't ask for
7 specific.

8 Q. Okay. I think you mentioned this in your report. Your
9 initial report does not conflict with Dr. Allen's initial
10 report, does it?

11 A. Because we're addressing two different problems. That's
12 why we didn't have any conflict over there.

13 Q. So let's move to your rebuttal report and specifically
14 your section on travel times to early-voting locations. I
15 believe your rebuttal report also argues that a voter's travel
16 time to the early-voting center should be considered as a
17 factor?

18 A. Yes.

19 Q. Does your discrete event simulation model account for
20 voter travel time?

21 A. Well, because I was not asked to compare one location
22 with the multiple locations. So I didn't build any simulation
23 model to it. What I wrote here is suggesting if we just
24 consider wait time to compare multiple and one location, this
25 is not good enough.

1 Q. I think you mention that Dr. Allen's finding that the
2 pooling effects of the single early-voting location improves
3 wait times that logic could be reduced to an argument that we
4 should have one election-day polling location for a county?

5 A. Yes. Because if that is correct argument that I think
6 what I wrote in trying to show you why I think this is not
7 right because pooling effect, that is correct. So one location
8 will have a shorter wait time compared to multiple locations
9 given fixed number of resources. But if we cannot just use
10 this to say one location is better than multiple locations.

11 Q. Would any professional in your field actually recommend
12 an allocation like that, a single voting location for a county
13 or a state or even the nation?

14 A. I haven't seen anything. That's why I'm thinking this
15 is absurd.

16 Q. That would be a pretty absurd result, right?

17 A. Yes. That basically confirms saying wait time alone is
18 not enough.

19 Q. In your rebuttal report you use some travel times in
20 Franklin County as an example. Are you aware that the
21 early-voting location in Franklin County was specifically
22 selected to be within two miles of the population that heavily
23 walks as their mode of transportation?

24 A. Because here I'm trying to say if we use single location
25 then that's one possible scenario.

1 Q. Are you aware that polling locations in Franklin County
2 are assigned so that no voter is more than two miles from their
3 voting location?

4 A. I don't know this. But I don't know how this possible
5 if you only use one location.

6 Q. But an early voter could also vote on election day,
7 right?

8 A. What?

9 Q. An early voter could vote on election day, right?

10 A. Right.

11 Q. They're not just confined --

12 A. Correct.

13 Q. If they voted on election day, in Franklin County at
14 least, they could vote at a polling location that is within two
15 miles of their home?

16 A. I don't know this. But that's good to have this.

17 Q. You mention a few other states that require a minimum
18 number of early-voting locations according to the population of
19 the county, right?

20 A. Right.

21 Q. And in New Mexico, for example, counties with less than
22 50,000 voters must have at least four early-voting locations?

23 A. Can you point me to which page?

24 Q. It's the second page of that travel-time analysis. Page
25 5, New Mexico.

1 A. Okay.

2 Q. Do you know anything about New Mexico's voting laws?

3 A. No. This is what I found according to their law. I
4 don't know what like happened exactly.

5 Q. So you don't know if they have no-excuse absentee
6 balloting?

7 A. I do not know that.

8 Q. You don't know if they permit votes by mail?

9 A. I do not know.

10 Q. You don't know how many days of early voting they have?

11 A. I don't know.

12 Q. You also mentioned Texas. Does Texas have no-excuse
13 absentee voting by mail?

14 A. I don't know.

15 Q. You also note that a Nevada county seeks to make sure
16 that no voter is more than three miles from an early-voting
17 center. That's not a law in Nevada, right?

18 A. Yes. I didn't say this is law.

19 Q. It's just one county's stated policy?

20 A. Yes. It's just saying what they're doing.

21 Q. You've never worked at a county board of elections in
22 Ohio, have you?

23 A. No.

24 Q. Never had to locate a facility for early voting?

25 A. No.

1 Q. Never had to find a location for an election day polling
2 place?

3 A. No.

4 Q. You don't know the logistics involved in finding an
5 early-voting location?

6 A. No.

7 Q. Did you know they have to be ADA compliant?

8 A. No.

9 Q. Securely connected to the county's voter registration
10 database somehow?

11 A. No. I don't think those things related to how to
12 compare one location to multiple locations.

13 Q. Did you know Cuyahoga County tried to move their
14 early-voting location and could not find one suitable site for
15 2016?

16 A. I don't know that.

17 Q. I think you're assuming here that additional voting
18 locations are geographically dispersed in such a way that they
19 reduce at least some voters' travel times, right?

20 A. Uh-huh.

21 Q. Do you have any reason to assume that that's what
22 counties would do with additional locations?

23 A. Well, what I reported in my rebuttal report I just
24 trying to say one location is not good idea or how to compare
25 with that only considering wait time is not good enough. I

1 don't know what they doing.

2 Q. Have you read any reports submitted by Dr. Timberlake in
3 this case?

4 A. No.

5 Q. So you're not aware that he cites the most logical
6 location to put another early-voting location is basically
7 right across the street from the existing one?

8 MR. KAUL: Objection. Mischaracterizes.

9 THE WITNESS: I don't -- I haven't seen his report so
10 I don't know what he wrote.

11 BY MS. PIERCE:

12 Q. You do cite a number --

13 THE COURT: You going to bring this in for a landing?

14 MS. PIERCE: Sure.

15 BY MS. PIERCE:

16 Q. I'll go through your literature review, Dr. Yang. You
17 cite a number of reports or publications in this section.

18 A. Which section?

19 Q. Your travel time section?

20 A. Okay. I see.

21 Q. Two of those articles only relate to election day,
22 right?

23 A. Which two are you referring?

24 Q. The Haspel and Knotts publication and the Gimpel and
25 Schknecht publication?

1 A. I don't recall what they exactly had over there but I
2 need to take a look at the article one more time. I do know
3 they talking about the travel distance to the polling station.
4 It could be election or early voting or not early vote.

5 Q. So safe to say you don't recall the methodologies they
6 used to --

7 A. No.

8 Q. You also cite a study of early voting in Ohio elections
9 conducted by Kaltenthaler; is that right?

10 A. Yes. By Akron.

11 Q. Are you aware of the methodology used to conduct that
12 analysis?

13 A. I think they're based on the poll. So the poll must be
14 a survey.

15 Q. Are you aware that only 4.7 percent of 189 early voters
16 polled in that report cited the inaccessibility of the
17 early-voting center is the reason to not?

18 A. For the sample size, that's a scientific decision. You
19 cannot just say 189 is not enough or you cannot make a judgment
20 saying 189 is large or small. You have to do a more thorough
21 scientific calculation to make sure the sample size is large
22 enough or not.

23 Q. Did you do that analysis?

24 A. No.

25 Q. And finally, the Kasdan article you cite, was that

1 issued in a peer-reviewed publication?

2 A. Which one?

3 Q. Kasdan.

4 A. Could you point me to which paragraph I cited to that?

5 THE COURT: It's the first full paragraph.

6 THE WITNESS: Kasdan, I don't recall exactly. Over
7 there I think they talk about locations and potential impact on
8 turnout.

9 BY MS. PIERCE:

10 Q. Did you do any research to confirm that these articles
11 have not been critiqued in other publications?

12 A. No, I haven't.

13 Q. You haven't?

14 A. I haven't.

15 MS. PIERCE: That's it for me, Your Honor. Thank you.
16 Thank you, Dr. Yang.

17 MR. KAUL: Very briefly.

18 - - -

19 REDIRECT EXAMINATION

20 BY MR. KAUL:

21 Q. You were about to say something in response to a
22 question about average wait times in Ohio before?

23 A. Right.

24 Q. What were you going to say?

25 A. The average wait time in --

1 Q. You were asked if you knew what the average wait time,
2 if you knew the average wait time was 11 minutes or something?

3 A. Right. Because the average wait time because I thought
4 she was comparing 11 minutes with 30 minutes. They are two
5 different things.

6 Q. What do you mean by that?

7 A. The average wait time 11 minutes doesn't say the maximum
8 wait time. Eleven minutes doesn't mean everybody will wait for
9 11 minutes. So somebody could wait for zero and some might
10 wait for hours. You take the average, it still could be 11
11 minutes. Average wait time, the metric alone, could be
12 misleading. We need to consider other metrics as well.

13 Q. You were asked if you knew you had data about machine
14 failure rates in Ohio?

15 A. Right. That's from the manufacture.

16 Q. What do you know about machine failure?

17 A. If I recall this correct, the mean time, the average
18 time between two failures is 163 hours.

19 Q. That's for DREs?

20 A. For DRE.

21 Q. That's 163 hours of service?

22 A. Yes. So there's a mean time so if you have the machine
23 down right now and got fixed and then run, on average, 163
24 hours, it will be down second time. So that's average. So
25 still the average 163 could be happen one hour after 200 hours.

1 So it's still average 163.

2 MR. KAUL: No further questions.

3 MS. PIERCE: Just one more, Your Honor.

4 - - -

5 RECROSS-EXAMINATION

6 BY MS. PIERCE:

7 Q. You don't know how often DRE machines fail in Ohio, do
8 you?

9 A. I trust this manufacture studies and also there's
10 external article about it talking about this mean time between
11 failure MTVF is standard metric used in industry and academia
12 talking about failure rates is 163.

13 Q. You don't know how often DRE machines fail in Ohio on
14 election days, do you?

15 A. Their study shows empirically of 163 hours is how they
16 calculate it.

17 MS. PIERCE: Thank you, Your Honor.

18 THE COURT: Thank you, Dr. Yang. You may step down,
19 sir.

20 MR. VOIGT: Your Honor, just two really quick
21 housekeeping matters.

22 THE COURT: Okay.

23 MR. VOIGT: Both counsel, we were a little bit unsure
24 about Wednesday of next week. Is that --

25 THE COURT: These folks are probably going to travel

1 and I'm wondering if we don't -- do you have flights that day?

2 MR. SPIVA: I think some of us do. We could probably
3 carry over to Wednesday. Maybe do a half day.

4 THE COURT: So we're talking about doing away with
5 Wednesday; is that right?

6 MR. VOIGT: From our perspective it's up to the Court.
7 We would continue on Wednesday if you'd like to, Your Honor.

8 MR. SPIVA: We --

9 THE COURT: You weren't planning to be in session on
10 Wednesday.

11 MR. SPIVA: No. Just because we had understood Your
12 Honor to say that Wednesday was not going to be a day in
13 session. I'm pretty sure that we would be available to do at
14 least a partial day Wednesday.

15 THE COURT: Travel the day before Thanksgiving is a
16 nightmare.

17 MR. SPIVA: We may not have witnesses.

18 THE COURT: And if the weather is bad it's even worse.
19 So why don't we plan to go Monday, Tuesday next week and then
20 we'll pick up after the holiday.

21 MR. VOIGT: And one more just small thing. I ask that
22 the motion for separation continue in that it extend outside of
23 the courtroom. In other words, when we've been prepping our
24 witnesses, we haven't been talking about what other witnesses
25 have said. When we've been talking to our experts we

1 specifically not told them.

2 THE COURT: Do you have reason to believe that they
3 are doing that?

4 MR. VOIGT: No, Your Honor. No, Your Honor. I'm just
5 asking for that order in place.

6 THE COURT: That would be my understanding.

7 MR. SPIVA: And we haven't been doing that. Your
8 Honor, I do think that it is unusual not to be able to
9 communicate with experts and have experts be in the courtroom
10 to view other expert testimony or fact testimony. That's
11 oftentimes how they do their rebuttal when the plaintiffs'
12 rebuttal comes on, the expert has watched the defense expert
13 and comes back in and rebuts what they said. I will say that
14 Dr. Timberlake, when he was on the stand, I guess it was
15 Tuesday, commented on fact witness testimony --

16 THE COURT: He did.

17 MR. KAUL: -- he had heard. So it wasn't a secret
18 that he was here. Mr. Voigt knows what he looks like. He
19 deposed him.

20 THE COURT: He sat right over there.

21 MR. SPIVA: So I wasn't trying to avoid the Court's
22 order. It didn't even occur to me that the experts wouldn't be
23 allowed to be in the courtroom.

24 THE COURT: Well, if you folks want to come to an
25 agreement about how we operate going forward, I'm happy to

1 entertain that.

2 MR. VOIGT: Thank you, Your Honor.

3 THE COURT: Thank you. See you tomorrow morning at
4 nine o'clock. Oh, videos. What do we have?

5 MR. MCTIGUE: We reached an agreement on stipulations.
6 It's not signed yet but I believe we're good.

7 THE COURT: Do I need Mr. Palmer here tomorrow?

8 MR. MCTIGUE: No.

9 THE COURT: All right. Thank you.

10 MR. SPIVA: Thank you, Your Honor.

11 (The proceedings were adjourned at 5:48 p.m.)

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I, Lahana DuFour, do hereby certify that the foregoing is a true and correct transcript of the proceedings before the Honorable Michael H. Watson, Judge, in the United States District Court, Southern District of Ohio, Eastern Division, on the date indicated, reported by me in shorthand and transcribed by me or under my supervision.

s/Lahana DuFour
Lahana DuFour, RMR, CRR
Official Federal Court Reporter