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Before the Subcommittee on Elections for the Committee on House Administration of the United States House of Representatives

Hearing on "Voting in America: The Potential for Polling Place Quality and Restrictions on Opportunities to Vote to Interfere with Free and Fair Access to the Ballot"

June 11, 2021

Summary

- Line length is a persistent and systematic problem in many areas: the same places with long lines in one election are more likely to have long lines in elections two or four years later.
- A voter's race is one of the strongest predictors of how long they wait in line to vote: non-white voters are three times more likely than white voters to wait longer than 30 minutes and six times as likely to wait more than 60 minutes.
- My research shows that the gap in wait times between white and non-white voters is more than simply an urban/rural divide, although that divide also exists. Even within a given urban, suburban, or rural county, lines tend to be longer in neighborhoods and precincts with higher concentrations of non-white voters.
- One of the reasons why non-white voters wait longer to vote is that fewer resources, such as poll workers and voting machines, are allocated to precincts with more non-white registrants.
- Policies like precinct closures, shorter voting hours, and voter ID laws can lengthen lines in polling places, particularly those with a high share of non-white registrants.
- Waiting in a long line to vote can make voters less likely to turn out in future elections.
- Voters who wait in a long line are less confident in the integrity of the electoral system as a whole.

I. Introduction

Managing the length of lines at polling places is one of the most crucial tasks that state and local election officials must handle. The experience that a voter has at their polling place is an important, but often understated, piece in the democratic process. Having a positive experience while voting inspires confidence in the electoral system as a whole, and makes voters feel more confident that their vote—and the votes of others—was counted accurately. When

voters have a negative experience because of a long line, my research shows that they are less likely to turn out in subsequent elections.

The political science literature on the topic of long lines to vote has been steadily growing over the past twenty years. That research has found that long lines at polling places are not random and do not come about by happenstance—instead, there are systematic factors which contribute to the problem. These systematic factors result in a substantial difference between the wait times for white voters and non-white (especially Black) voters. [1] Voters in predominantly non-white neighborhoods are more likely than those in white neighborhoods to bear the additional cost of a long wait to cast their ballot.

My research, and that of other political scientists, highlights that state-level policymaking and resource allocation at the local-level can play an important role in how long voters must wait to vote. Because voters' experiences at the polling place have downstream consequences on their future turnout behavior and their confidence in the electoral system, policies that widen the wait time gap between white and non-white voters have the potential to put a thumb on the electoral scale by reshaping the electorate.

II. **Long lines are a chronic problem in certain areas**

In 2013, President Obama convened the bipartisan Presidential Commission on Election Administration (PCEA). The Commission comprised state and local election officials and business leaders and was chaired by the chief lawyers for the Obama and Romney 2012 presidential campaigns. One of the charges given to the committee was to study the problem of lines at polling places and provide a set of best practices for election administrators to deal with the problem. A key recommendation from the PCEA's January 2014 report is that "*as a general rule, no voter should have to wait more than half an hour in order to have an opportunity to vote*."[2]

The Cooperative Election Study indicates that in the November 2020 election, approximately 16 million voters waited in a line for longer than the 30-minute benchmark set by the PCEA.[3] This was 17.2 percent of all Election Day and in-person early voters in 2020. These data show that about 5 million people (5.5 percent of in-person voters) waited more than an hour to vote—twice the upper limit recommended by the PCEA. Altogether, almost one out of every six in-person voters waited longer than 30 minutes to vote in November 2020.

[1] The Census Bureau recognizes "Hispanic" to be an ethnicity, rather than a race. When I refer to "white" voters throughout this testimony, I specifically am referring to white voters who are also not Hispanic. Similarly, when I refer to "non-white voters" I am referencing non-white or Hispanic voters.

[2] "The American Voting Experience: Report and Recommendations of the Presidential Commission on Election Administration." January 2014. Quotation from page 14. Emphasis in the original report. At writing of this testimony, the PCEA Report is available through the U.S. Election Assistance Commission's website: https://www.eac.gov/election-officials/pcea.

[3] These statistics come from the 2020 Cooperative Election Study Common Content. The data are available at: https://doi.org/10.7910/DVN/E9N6PH.

What makes these figures more troublesome is that many of the states and counties that had long wait times in 2020 also had long lines in prior elections. The Elections Performance Index (EPI), a non-partisan, data-driven effort to evaluate states' election administration performance, provides evidence that lines are a recurring problem.[4] The EPI has measured the average number of minutes voters waited in line to cast their ballot in federal general elections since 2008.[5] When comparing any two election years, there is always a strong and positive correlation between a state's average wait times in year A and year B.[6] To illustrate this point with an example, Vermont had the shortest average wait time in the 2008 election.[7] In each election between 2012 and 2020, Vermont was among the top-five states with the shortest wait times in the country. On the other end of the scale, South Carolina had the longest average wait time in 2008, and was never better than the fourth-worst state between 2012 and 2020.

One major concern about long lines being a chronic problem in certain areas is that some voters must budget a lengthy portion of their day every time they want to cast a ballot, while others may vote in every election for years and never stand in a line. As I discuss in the next section, what makes this even more troubling is that non-white voters are more likely to be in the first category, and white voters are more likely to be in the second. And this gap in wait times is largely driven by resource allocation decisions and other administrative policies—a point I return to in Section IV of this testimony.

III. Non-white voters tend to experience wait times

Another consistent pattern about wait times at polling places is that non-white voters are considerably more likely to face a long wait time than white voters. This pattern is particularly pronounced among Black voters. Political scientists have studied line length using numerous methodologies, and a strong relationship between race and wait times is one of the most robust findings to emerge from these studies. In my research, I have found that the race gap in wait times is driven by more than simply an urban-rural divide. A precinct with a high concentration of non-white voters tends to have longer lines than a precinct in a predominantly white area, even if those two precincts are in the same urban or rural county.

The most common approach used by political scientists to measure election lines is survey research. The Cooperative Election Study (CES)[8] and the Survey of the Performance of American Elections (SPAE)[9] are two high-quality academic surveys which have been an

[4] The Pew Charitable Trusts launched the Elections Performance Index in 2013 Pew Charitable Trusts, and in 2017 the MIT Election Data and Science Lab took over administration of the project. More information about the EPI is available at: https://elections-blog.mit.edu/about.
[5] Due to data availability problems in 2010, that year is excluded from the EPI.
[6] See page 79 of the August 2018 EPI Methodology Report (https://elections-blog.mit.edu/sites/default/files/2020-08/2016-epi-methodology.pdf) and page 34 of the 2018 Update to the EPI Methodology (https://elections-blog.mit.edu/sites/default/files/2020-08/2018-epi-update(1).pdf).
[7] EPI data available at: https://elections.mit.edu/#/data/indicators?view=indicator-profile&indicator=WTV.
[8] Prior to 2020, this was known as the Cooperative Congressional Election Study, or CCES. CES/CCES data are available at: https://cces.gov.harvard.edu/.
[9] The SPAE is published by the MIT Election Data and Science Lab. https://electionlab.mit.edu/research/projects/survey-performance-american-elections

invaluable resource for studying long lines. In the days and weeks immediately following a federal election, each survey asks voters, "Approximately, how long did you have to wait in line to vote?"

My research has used these data sources to show that, compared to white voters, voters who are not white are "three times as likely to wait longer than 30 minutes and six times as likely to wait more than 60 minutes" to cast their ballot.[10] Other researchers have corroborated this result in their own work, finding that the average amount of time a white voter tends to wait to vote is approximately half as long as the average wait for non-white voters.[11]

My initial analysis of data from the November 2020 presidential election suggests that not only was the proportion of voters who waited longer than 30 minutes higher than in any federal election since at least 2008, the racial gap in wait times also persisted. [12] A higher percentage of non-white voters than white ones had to wait in excess of 30 or 60 minutes to cast their ballot in-person. The results are particularly strong when you compare Black voters to white ones. While roughly 17 percent of white voters encountered a line longer than 30 minutes, about 23 percent of Black voters had a similar experience. Similarly, more than 1 in every 20 Black voters waited longer than 60 minutes, compared to 1 in every 44 white voters.

Researchers have found similar patterns when measuring line length with tools other than surveys. Some of these tools include leveraging information about the time that precincts close at the end of the day, [13] stationing observers inside of polling places to record information about the flow of voters through the precinct, [14] partnering with local officials to have poll workers record information about line lengths throughout the day, [15] and using cell phone tracking data. [16] Every

[10] Stephen Pettigrew. 2017. "The Race Gap in Precinct Wait Times: Why Minority Precincts are Underserved by Local Election Officials." *Political Science Quarterly* 132. Quotation from page 527.
[11] Charles Stewart III. 2013. "Waiting to Vote in 2012." *Journal of Law & Politics* 28(4).
Charles Stewart III and Stephen Ansolabehere. 2015. "Waiting to Vote." *Election Law Journal: Rules, Politics, and Policy*. 14(1).
[12] The figures in this paragraph were calculated using data from the 2020 Cooperative Election Study.
[13] Stephen Pettigrew. 2021. "The Downstream Consequences of Long Waits: How Lines at the Precinct Depress Future Turnout." *Electoral Studies* 71.
Michael C. Herron and Daniel A. Smith. 2015. "Precinct Closing Times in Florida During the 2012 General Election." *Election Law Journal* 14(3).
Christopher Famighetti, Amanda Melillo, and Myrna Pérez. 2014. "Election Day Long Lines: Resource Allocation." Brennan Center for Justice.
[14] Robert M. Stein, et al. 2020. "Waiting to Vote in the 2016 Presidential Election: Evidence from a Multi-county Study." *Political Research Quarterly* 73(2).
Douglas M. Spencer and Zachary S. Markovits. 2010. "Long Lines at Polling Stations? Observations from an Election Day Field Study." *Election Law Journal: Rules, Politics, and Policy* 9.
[15] Matthew Weil, Tim Harper, Charles Stewart III, and Christopher Thomas. 2019. "The 2018 Voting Experience: Polling Place Lines." Bipartisan Policy Center.
John C. Fortier, Matthew Weil, Charles Stewart III, Tim Harper, and Stephen Pettigrew. 2018. "Improving the Voter Experience. Reducing Polling Place Wait Times by Measuring Lines and Managing Polling Place Resources." Bipartisan Policy Center.
United States Government Accountability Office. "Observations on Wait Times for Voters on Election Day 2012." GAO-14-850.
[16] M. Keith Chen, Kareem Haggag, Devin G. Pope, and Ryne Rohla. 2019. "Racial Disparities in Voting Wait Times: Evidence from Smartphone Data." Conditionally accepted at *The Review of Economics and Statistics*.

one of these studies has shown that lines tend to be shorter in precincts with higher proportions of white voters and longer in precincts with higher proportions of non-white voters.

IV. Factors that influence the length of lines at polling places

Given that there is a clear relationship between race and wait times, the next question asked by researchers is why this relationship exists. It is certainly the case that sometimes long lines can be attributed to unique factors at a precinct: a voting machine malfunction, a poll worker calling-in sick, a busload of voters being dropped off at the same time. However, my research and that of other political scientists has found that long lines tend to be driven by more systematic factors. These factors can be grouped into two categories: limited resources at polling places and limited opportunities to cast a ballot.

A. Resources are more limited in minority precincts

In my research, I investigate whether the difference in wait times between white and non-white voters can be attributed to an urban-rural divide. If line management is more complicated in more densely populated areas, then that may explain why a typical Black or Hispanic voter living in a city is more likely to encounter a long line when they go to vote than a typical white voter living in a rural area.

My research has found that the urban-rural divide does not fully account for the racial differences in wait times.[17] In fact, the urban-rural divide accounts for less than half of the race differences in voting line length. Instead, the root of the gap seems to be in the allocation of resources to precincts. In the areas I studied, predominantly white precincts had about 20 fewer voters per voting machine, and 90 fewer voters per poll worker than predominantly minority precincts.

This uneven allocation of resources, which has been noted throughout the political science literature, makes it more likely for bottlenecks to develop in precincts in minority neighborhoods, leading to longer lines for those voters.[18] Having too few voting machines or too few poll workers to check-in voters, for example, means that bottlenecks may develop as voters wait to cast their ballot or check-in to vote. These bottlenecks cause lines to grow longer for voters waiting to complete those steps of the voting process.

B. Limiting opportunities to vote can increase wait times

Another major contributor to the length of lines is the number of options and opportunities that voters have to cast their ballot. The findings from queueing theory[19] help to explain the impact that policy changes like precinct closures, adding days to the early voting period, or voter ID requirements can have on voting lines. Research has shown that these policy

[17] Pettigrew, 2017.
[18] Michael C. Herron and Daniel A. Smith. 2016. "Precinct Resources and Voter Wait Times." *Electoral Studies* 42. Charles Stewart III. 2015. "Managing Polling Place Resources." Caltech/MIT Voting Technology Project.
[19] Queueing theory is a branch of operations research which has been applied to the study of lines at polling places

changes often have disparate effects on voters of different races, contributing to differences in wait times experienced by voters. For example, even though a voter ID requirement might apply to all voters in a state, researchers have found that ID requirements increase line length more in minority precincts because voters in those precincts are less likely to have a valid form of identification. [20] Because it takes more of a poll worker's time to check-in a voter without an ID card, having one fewer poll worker to check-in other voters will cause lines to back-up, even for voters who do have identification.

Queueing theory principles tell us that back-ups occur when the number of arrivals (i.e. voters) overwhelms the system enough to generate a bottleneck. Conceptually, you can think of a voting precinct as similar to check-out lines at a grocery store or traffic moving along a highway. Opening a new check-out register or adding an additional lane to the highway can help shorten lines and ease traffic by spreading out shoppers and vehicles. Ultimately, the best-case scenario for avoiding bottlenecks occurs when new arrivals show up at evenly spaced intervals. In the context of a polling place, 60 voters arriving one-per-minute is less likely to result in a long line than if all 60 arrive at the same time.

Although they do not have the ability to control when voters arrive at the precinct, policymakers and local election officials can provide more opportunities and options to vote, making it more likely that voters' arrivals will be more spaced out over time. In the context of voting, these opportunities and options to vote can come in one of three forms:[21]

1. Opening new polling places that are well-staffed and well-resourced can decrease the chances of long lines occurring at any single precinct. Closing polling places increases the number of voters per precinct, making it more likely that long lines develop. Precinct closures can cause longer lines when they are not accompanied by dramatic changes to the remaining polling places. If precincts are closed for the sake of cutting costs, then the remaining polling places may end up with fewer poll workers or voting machines per voter, which would increase wait times. Similarly, even if the resources per voter remains constant, the physical size of the remaining polling places may not be large enough to accommodate the increased number of voters, creating the potential for bottlenecks.[22] Also, if polling places in non-white neighborhoods are more likely to be closed,[23] then

[20] Stein, et al., 2020.
[21] Justin Levitt. 2013. "Fixing That: Lines at the Polling Place." *Journal of Law & Politics* 28(4).
[22] One approach to consolidating precincts that has been successfully used in some parts of the country is transitioning from the traditional "neighborhood precinct" model of polling places to a "vote center" model. With vote centers, there are fewer locations to vote, but those locations are larger, conveniently located, and have as many (if not more) poll workers and voting machines than the total in all the old neighborhood precincts. Even though this model cuts down the number of polling places, it is possible to implement it in a way that cuts down on wait times. Implementing a vote center model is a significant departure from the status quo in most parts of the country, and is not nearly as common as common simply closing precincts and reassigning those voters to the remaining ones.
[23] Michael E. Shepherd, Adriane Fresh, Nick Eubank, and Joshua D. Clinton. Forthcoming. "The Politics of Locating Polling Places: Race and Partisanship in North Carolina Election Administration, 2008-2016." *Election Law Journal*.
Joshua D. Clinton, Nick Eubank, Adriane Fresh, and Michael E. Shepherd. Forthcoming. "Polling Place Changes and Political Participation: Evidence from North Carolina Presidential Elections, 2008-2016." *Political Science Research and Methods*.

the added commute time for those voters adds to the time burden placed upon them, even if the wait times at the precinct do not change.

2. Increasing the hours of operation of polling places and number of days of early voting encourages voters to arrive at different times, thereby diminishing their chance of having to wait in a line. Decreasing the number of hours or days has the opposite effect, causing lines to grow longer because of large clusters of voters all arriving at the same time.

3. Providing broader access to voting-by-mail can decrease line length by decreasing the number of voters showing up to vote in-person, even if the overall number of ballots cast remains the same. Restricting mail ballot opportunities forces voters to show up in-person to vote, thereby increasing the strain on polling places.

Because of the COVID-19 pandemic, the November 2020 election provides a lens into how big changes may interact with each other. On one hand, most states experienced a dramatic up-tick in the number of voters choosing to vote through the mail. If this were the only change to have occurred, then we would expect to see shorter lines in 2020 than in prior years. On the other hand, COVID-19 safety protocols lengthened the amount of time the voting process required, and some states and counties had difficulties recruiting poll workers and had fewer polling locations than normal. Even though there were approximately 15 million fewer in-person voters in 2020 than 2016, the consequence of all these administrative changes was that the average in-person voter in 2020 waited longer to cast their ballot than in 2016.

V. Long lines diminish turnout and make voters less confident in the electoral system

In addition to studying the causes of long lines, political scientists have also considered the consequences that long waits can have on voters. The most basic impact of waiting in a line is the time burden placed upon the voter—what has been referred to as a "time tax."[24] Compared to those who live in areas with consistently short lines, voters who live in areas with chronically long lines must sacrifice more of their time to exercise their right to vote. This can be a particular burden for people who have less flexibility in their schedule, whether because they have constraints in their work schedule or because they have childcare or eldercare responsibilities.

Long lines at polling places have also been found to have an impact on voter turnout. One way that lines impact turnout occurs when a voter joins the line but leaves before casting theirs ballot—referred to in queueing theory as "reneging." Although it is difficult to collect data on reneging, two studies find that there is a positive correlation between the length of the line and the number of people who renege by leaving the line.[25] The studies find that lines with as few as five people significantly increase the chance that somebody will leave the line before voting.

[24] Elora Mukherjee. 2013. "Abolishing the Time Tax on Voting." *Notre Dame Law Review* 85(1).
Donald L. Davison and Michael Krassa. 2019. "Time Taxes and Voting Queues: The Voting Rights Act after *Shelby County, Alabama v. Holder (2013)*." *National Political Science Review* 20(1).
[25] Spencer and Markowitz, 2010. Stein, et al., 2020.

Some of these voters may return at another time to cast a ballot but limiting voting hours or early voting opportunities diminishes their opportunities to do so.

My research has also found that long wait times have a detrimental impact on turnout in subsequent elections.[26] Voters who waited between 30 and 45 minutes to vote were 1 percentage point less likely to turn out to vote in the next election, compared to voters who waited less than 15 minutes. When considering voters who waited more than 60 minutes, this impact increases to about 1.6 percentage points. While these percentages may seem small, it is important to remember that in many elections millions or tens-of-millions of voters experience long lines, meaning that future decreases in turnout can be in the hundreds-of-thousands. Additionally, because racial minorities are disproportionately likely to encounter a long line to vote, their turnout is disproportionately impacted. My research finds that in 2014, Black voters made up roughly 10 percent of voters, but over 20 percent of people who did not turn out because of a long line they experienced in 2012.

Another effect of long lines is that they negatively impact voters' confidence in the electoral system as a whole. Voters who wait in a long line are less likely to believe that their vote choices would be kept a secret, and less likely to be confident that their vote was counted correctly.[27] Additionally, the amount of time a voter waits in line has a substantial effect on whether they believe that the poll workers at their precinct were doing a good job, which is troubling given that many of the causes of long lines are completely out of the control of individual poll workers.[28]

VI. Conclusion

By-and-large, local election officials and poll workers want voters to leave their polling place with a sense of civic pride and satisfaction in the electoral process. Standing in a long line before being able to vote is, perhaps, one of the most common ways that this satisfaction is eroded. The burdens of long lines are not uniformly experienced by all voters. Instead, voters of color are considerably more likely than white voters to be confronted with a long line standing between them and the ballot. This fact becomes even more troubling when it is coupled with research that finds that long lines diminish a voter's chances of turning out in the next election and erode the voter's confidence that their vote was counted correctly. The unique circumstances of the 2020 pandemic notwithstanding, election officials in many parts of the country have made positive progress on the problem of long lines in recent years. There always remains, however, the potential that new changes to election procedures and election law can create back-sliding—resulting in longer lines and a widening gap in wait times between white and non-white voters.

[26] Pettigrew, 2021.
[27] Michael C. Herron, Daniel A. Smith, Wendy Serra, and Joseph Bafumi. 2017. "Wait Times and Voter Confidence. A Study of the 2014 Midterm Election in Miami-Dade County." From *Races, Reforms, & Policy: Implications of the 2014 Midterm Elections*. Edited by Christopher J. Galdieri, et al. University of Akron Press.
[28] Pettigrew, 2021.