LAWYERS' COMMITTEE FOR CIVIL RIGHTS UNDER LAW

VOTING RIGHTS RESEARCH BRIEF

EARLY VOTING PATTERNS BY RACE IN CUYAHOGA COUNTY, OHIO

A Statistical Analysis of the 2008 General Election

Russell Weaver, Ph.D and Sonia Gill, Esq.

October 2012

Abstract

Several state legislatures recently have passed laws to scale back their early voting operations. Such efforts have been criticized by civil rights advocates and others who contend that minorities have utilized various forms of early voting at disproportionately high rates relative to whites, and that early voting reductions will tend to discourage minority electoral participation. This debate is being played out in advance of the 2012 Presidential Election in Cuyahoga County, Ohio. The following research attends to the question of, "who votes early in Cuyahoga County?" Specifically, insofar as the 2008 General Election is the most recent presidential election and is likely to be the best predictor of electoral behavior for 2012, this research brief estimates racial group usage of the two types of early voting methods that were available in the county in 2008: absentee by mail, and absentee in person. Ecological inference models demonstrate that white voters utilized the former method with a greater propensity than African Americans, but African Americans voted early in person at substantially higher rates than white voters. The results therefore provide an empirical basis to conclude that reducing early in person voting will disproportionately affect African American voters in Cuyahoga County.

Cuyahoga County, Ohio

About the Lawyers' Committee for Civil Rights Under Law

The Lawyers' Committee for Civil Rights Under Law is a nonpartisan, nonprofit organization, formed in 1963 at the request of President John F. Kennedy to enlist the private bar's leadership and resources in combating racial discrimination and the resulting inequality of opportunity - work that continues to be vital today.

About the Authors

Russell Weaver holds a Ph.D. in Geography and an M.A. in Economics from The State University of New York at Buffalo. At the Lawyers' Committee for Civil Rights Under Law, Russell serves as the Social Science Analyst for the Voting Rights Project, where he conducts empirical research on group voting behavior. His academic interests are focused on applying various spatial econometric and cluster detection methods to problems involving interactions of land use systems, politics, and public policy. Direct correspondence to rweaver@lawyerscommittee.org.

Sonia Gill serves as Associate Counsel for the Lawyers' Committee for Civil Rights Under Law in the Voting Rights Project. She focuses on issues of election law and administration, access to voting, and voter protection. Prior to joining the Lawyers' Committee, Sonia was Counsel for Senator Charles E. Schumer on the U.S. Senate Committee on Rules and Administration, where she advised on federal election issues including military and overseas voting, voter registration reform, and campaign finance. Sonia graduated from the University of Minnesota Law School in 2008. Direct correspondence to sgill@lawyerscommittee.org.

Acknowledgements

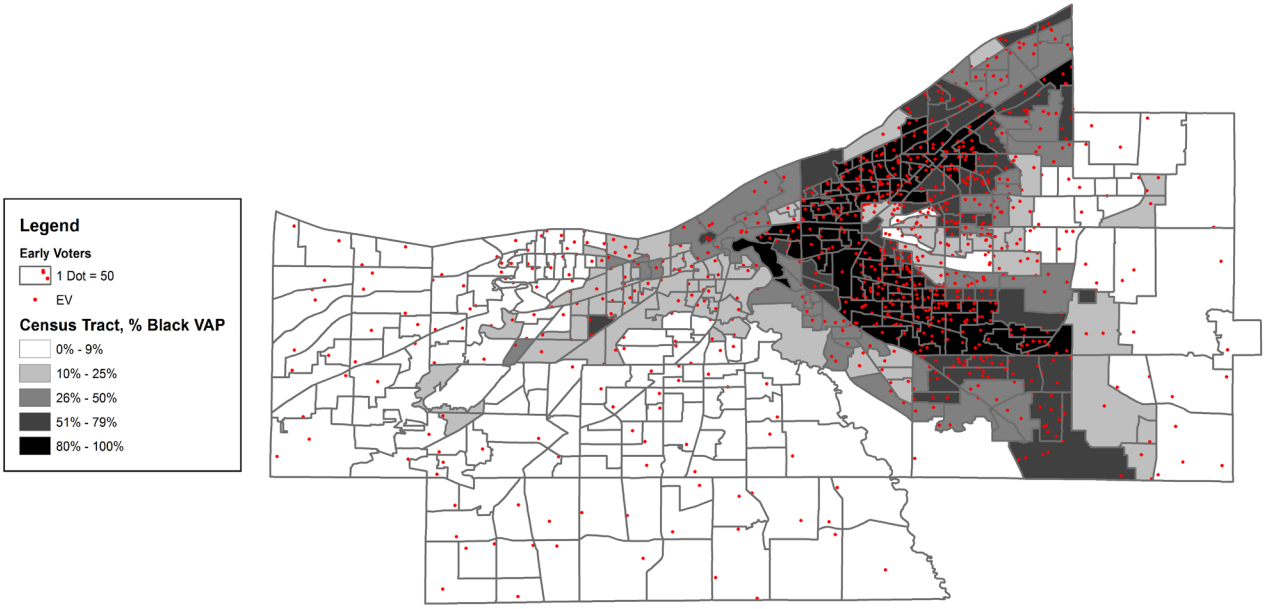
The Lawyers' Committee for Civil Rights Under Law would like to thank Dr. Norman Robbins of the Northeast Ohio Voter Advocates (NOVA) for assisting with data acquisition for this project.

Table of Contents

Executive Summary

Census tracts in Cuyahoga County, Ohio for which the Voting Age Population (VAP) is 80% or more African American, contain less than 15% of the county's total VAP; yet over 36% of all early in person (EIP) ballots that were cast countywide during the 2008 Presidential Election came from these areas. Figure I maps the distribution of 2008 EIP voters in Cuyahoga County jointly with the distribution of African American VAP. One dot on the map represents 50 EIP voters, and census tracts are shaded from light to dark based on the size of African American VAP relative to total tract VAP. Visual inspection reveals a clear concentration of EIP voters in relatively African American census tracts. These patterns, which are also evident in Table I, imply that regardless of intent, current policy proposals aimed at reducing opportunities to vote early in person in Ohio are likely to have a disproportionate impact on African American citizens in the state's largest county.

Figure I. Geographic distribution of EIP ballots, by census tract, by % Black VAP



This research brief utilizes statistical methods of ecological inference (EI) to empirically estimate the extent of the apparent disparity in EIP voting behavior between African American and white voters in Cuyahoga County. The results indicate that proposed reductions in early voting operations in the jurisdiction will disproportionately and substantially impact African Americans. Namely, EI estimates reveal that African American usage of EIP was approximately 26 times greater than white usage in 2008 (Table II). At the same time, white usage of voting by mail (VBM) was nearly 1.7 times greater than African American usage. This is of interest in that, of the two types of early voting methods available in Cuyahoga County—VBM and EIP—only EIP has been targeted for cutbacks. In other words, no VBM voters, a majority of whom are white, will be affected by the proposed rule changes; but many EIP voters, who are predominantly African American, potentially will be required to change their voting behavior.

While this is not to say that Cuyahoga County minority voters necessarily will be precluded from voting because of the proposed changes, a reasonable interpretation of these results is that eliminating opportunities to vote early in person effectively raises the cost of voting for many more African Americans than whites—and political science research is quite clear that increasing the cost of voting reduces electoral participation. Consequently, it is prudent for the state and county officials in Ohio who are attempting to decrease the EIP voting days and hours to critically reevaluate the data and consider the potentially disparate turnout effects of the proposals in Cuyahoga as well as other counties in Ohio.

Table I. Census tract-level voting behavior, by % Black Voting Age Population (VAP)

Black VAP (as % of VAP)	Total Votes*	EIP*	VBM*	EIP* (% of Votes)	VBM* (% of Votes)
< 10%	348,829	9,003	122,969	2.6%	35.3%
10% <= X < 20%	70,831	5,327	20,795	7.5%	29.4%
20% <= X < 30%	32,492	3,177	9,627	9.8%	29.6%
30% <= X < 40%	28,691	3,218	8,669	11.2%	30.2%
40% <= X < 50%	21,548	2,632	5,707	12.2%	26.5%
50% <= X < 60%	26,256	4,148	7,077	15.8%	27.0%
60% <= X < 70%	13,240	2,240	3,229	16.9%	24.4%
70% <= X < 80%	27,230	5,094	6,853	18.7%	25.2%
80% <= X < 90%	10,460	2,120	2,210	20.3%	21.1%
>= 90%	87,762	17,578	19,984	20.0%	22.8%
Grand Total	667,339	54,537	207,120	8.2%	31.0%

*Values reflect sample data (see Sec. III and Table 2 for a detailed explanation).

Table II. Aggregate EI estimates of early voting behavior by race (NH = Non-Hispanic)

Estimate	NH White	NH African American
% Voters that Cast EIP Ballots	0.8%	22.3%
% Voters that Cast VBM Ballots	36.2%	21.4%
Group Share of All Ballots	65.6%	28.6%
Group Share of EIP Ballots	6.7%	77.9%
Group Share of VBM Ballots	76.4%	19.7%

Complete EI results are presented in Table 3.

I. INTRODUCTION

Political science theory has long held that lowering the costs of voting increases electoral participation (Downs 1957; Riker and Ordeshook 1968; Highton 2004). One implication of this research is that adding more convenient forms of participation to the voting options menu will lead to greater turnout (Gronke et al. 2008). Jurisdictions across the U.S. have adopted methods of "convenience voting", such as no-excuse absentee voting and voting in person before Election Day, with this observation in mind. Indeed, over the past two decades, casting ballots other than at the polling place on Election Day has become "commonplace" in American elections (Gronke et al. 2008).

Among the variety of convenience voting options in use, there is a particularly "[r]apidly expanding list" of jurisdictions that offer early in person voting (Gronke et al. 2008, at Table 1). Although the precise rules and hours of availability for this method vary among and within states, the general idea is that voters are able to cast a ballot prior to an election, in person, at a satellite polling station or the county elections office (Gronke 2009). Such a program clearly increases an eligible individual's opportunities to vote, which effectively reduces participation costs, and can therefore boost overall turnout.

Nevertheless, several state legislatures recently passed laws to scale back their early voting operations. Such efforts have been met with criticism from civil rights groups, who contend that minorities utilize various forms of early voting at disproportionately high rates relative to whites. If true, then cutbacks to these institutions may disproportionately reduce minority participation. One jurisdiction where this debate is being played out in advance of the 2012 Presidential Election is Cuyahoga County, Ohio. The following research attends to the question of, "who votes early in Cuyahoga County?" Specifically, the 2008 General Election is employed as it was the most recent presidential election in Cuyahoga County and is likely to be the best predictor for voting in 2012. This research brief estimates racial group usage of the two types of early voting methods that were available in the county in 2008: absentee by mail and absentee in person. Ecological inference models demonstrate that white voters utilized the former method with a greater propensity than African Americans, but African Americans voted early in person at substantially higher rates than white voters. The results therefore imply that reducing early in person voting will disproportionately impact African American Ohioans.

II. BACKGROUND

In 2005 all registered voters in Ohio were granted the opportunity to vote in person for the full 35-day period prior to Election Day (*Obama for America v. Husted* 2012, See Opinion and Order Granting Preliminary Injunction). However, in early 2011, several Ohio lawmakers began proposing stricter limits on the days and hours that voters are permitted to cast their votes early. On February 28, 2011, the Ohio Secretary of State first announced a legislative initiative entitled "Ready 2012 and Beyond" (Ready 2012).[1] Ready 2012 was a package of changes to Ohio's election laws that, among its numerous proposals, aimed to: reduce the EIP voting period from 35 days to 16 days before an election; limit the hours that county boards of elections are able to offer EIP voting on Saturdays; eliminate all EIP voting on Sundays; and eliminate the last three days of the EIP voting period.[2] Shortly after the announcement by the Secretary of State, the

Ohio legislature introduced HB 194, an elections omnibus bill which contained the reform agenda encompassed by Ready 2012.[3] In spite of vociferous opposition by Ohio's voting rights community, HB 194 was passed by the state legislature and signed into law by Ohio's governor on July 1, 2011.[4]

In July 2011, while voter advocates were collecting signatures to put HB 194 on the ballot in November 2012 for a referendum vote (which they were ultimately successful in doing), the Ohio legislature enacted HB 224, which contained technical corrections necessitated by HB 194. In passing HB 194, the drafters inadvertently created two inconsistent provisions resulting in two different deadlines for EIP voting: the Friday deadline established by HB 194, and the original Monday deadline that already existed under Ohio law. HB 224 corrected the discrepancy by deleting the inconsistent language, effectively establishing Friday as the final day of the EIP period.[5] A year later, in July 2012, the Ohio Senate President announced a plan to repeal and replace HB 194 with new election reform legislation for the November 2012 election. Though a replacement bill was never ultimately introduced, a repeal bill was. SB 295 repealed the Friday early voting deadline contained in HB 194, but did not repeal the technical correction made by HB 224. The result was that the last three days of early voting remained abolished under Ohio law.

Finally, on August 15, 2012, in response to a series of tie votes submitted by boards of elections on the issue of extended early voting hours, which was widely offered by boards of election during the 2008 election, the Secretary of State issued Directive 2012-35, which effectively prohibited counties from offering any weekend voting hours whatsoever and limited the number of hours boards of election were able to offer early voting on weekdays beyond regular business hours.

In a lawsuit filed by the Presidential campaign of Barack Obama (Obama for America or "OFA"), which sought to restore early voting for the three days prior to Election Day, OFA claims that "tens of thousands of Ohio voters" will attempt to cast ballots on those days, and that early in person voters are disproportionately members of minority groups and the working class (*Obama for America v. Husted* 2012, see Opinion and Order Granting Preliminary Injunction). To support these assertions, OFA cites election studies that employ a proportional rule to estimate the minority component of the early in person voter universe—i.e., the studies aggregate early in person voters to census geographies and then assume that the proportion of the Census population in a given area that is, for example, African American, is equal to the African American proportion of early voters in the same area (Robbins and Salling 2012; Brill et al. 2012). One of the studies finds that the proposed restrictions to the early in person voting period in Ohio disproportionately harm African Americans in Cuyahoga County, where over half of early voters are estimated to be African Americans (Robbins and Salling 2012).

Ultimately, these arguments and empirical reports factored into a federal judge's decision to grant OFA a preliminary injunction, thereby temporarily reinstating the prior Ohio early voting period (*Obama for America v. Husted* 2012, see Opinion and Order Granting Preliminary Injunction). However, that decision is presently under appeal, and so the issue is not necessarily settled either legally or as a policy matter. Studies that do not make the strict proportionality assumption, such as those cited above, are therefore potentially valuable new contributions to the discourse. The current research brief is directed to that challenge. The Lawyers' Committee estimates early voting behavior by race in Cuyahoga County using common statistical methods of ecological inference.

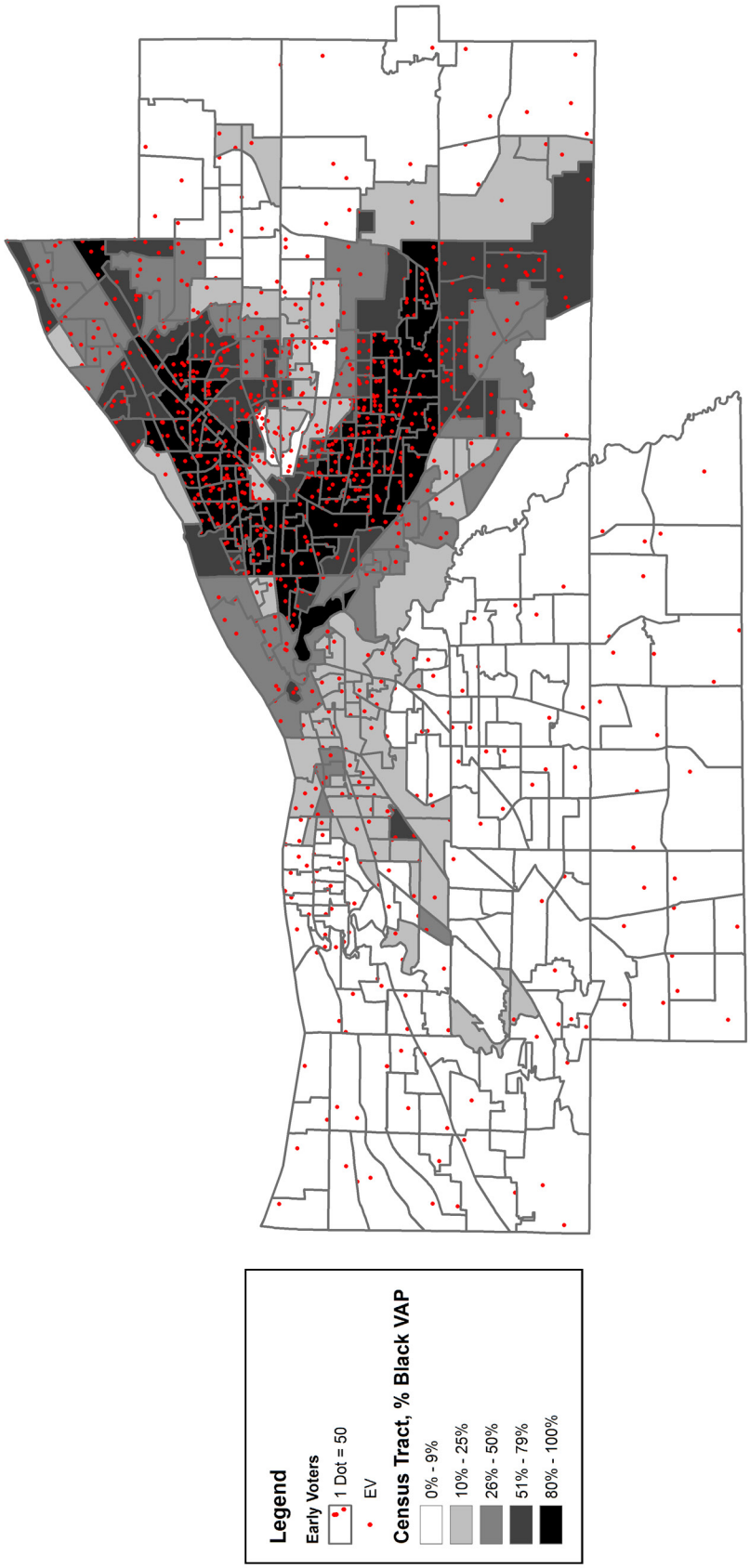


Figure I. Geographic distribution of EIP ballots, by census tract, by % Black VAP

By estimating voting behavior with ecological inference, we are able to avoid making the proportionality assumption and uncover additional information about early in person voting by race in Cuyahoga County. Our working hypothesis is that ecological inference will show that early in person voting patterns are even more racially divergent than the proportional studies found. For instance, consider Figure 1, which maps the distribution of EIP voters together with the distribution of African American voting age population (VAP). In the map, each dot represents 50 early voters within the given census tract, and census tracts are shaded from light to dark based on the size of tract VAP that is African American. The 95 census tracts colored in black, where African American VAP accounts for 80% or more of total tract VAP, contain 36% of all EIP voters; at the same time, these spaces are home to less than 14% of VAP.

Table 1 further demonstrates that as census tract VAP percentage becomes more heavily African American, EIP voting accounts for a larger fraction of total votes cast—with relatively homogenous African American census tracts casting EIP ballots approximately 20% of the time, compared to relatively homogeneous non-black census tracts where such ballots account for less than 3% of total votes. These facts suggest that the disproportionality between African American and white usage of early in person voting is potentially even greater than what is found in the proportional rule studies (e.g., Robbins and Salling 2012). If true, this proposition has significant implications for the proposed reductions to the Cuyahoga County EIP voting period.

Table I. Census tract-level voting behavior, by % Black Voting Age Population (VAP)

Black VAP (as % of VAP)	Total Votes*	EIP*	VBM*	EIP* (% of Votes)	VBM* (% of Votes)
< 10%	348,829	9,003	122,969	2.6%	35.3%
10% <= X < 20%	70,831	5,327	20,795	7.5%	29.4%
20% <= X < 30%	32,492	3,177	9,627	9.8%	29.6%
30% <= X < 40%	28,691	3,218	8,669	11.2%	30.2%
40% <= X < 50%	21,548	2,632	5,707	12.2%	26.5%
50% <= X < 60%	26,256	4,148	7,077	15.8%	27.0%
60% <= X < 70%	13,240	2,240	3,229	16.9%	24.4%
70% <= X < 80%	27,230	5,094	6,853	18.7%	25.2%
80% <= X < 90%	10,460	2,120	2,210	20.3%	21.1%
>= 90%	87,762	17,578	19,984	20.0%	22.8%
Grand Total	667,339	54,537	207,120	8.2%	31.0%

*Values reflect sample data (see Sec. III and Table 2 for a detailed explanation).

III. METHODOLOGY

The State of Ohio does not collect racial information on individual voters. By extension, the State lacks the data required to describe actual early voting patterns by race in Cuyahoga County. Accordingly, if such patterns are to be examined, then they must be estimated. The preferred means for making such estimates is via ecological inference using aggregate-level data.

A. Methods

Drawing a conclusion about individual behavior from aggregate data is referred to as making an *ecological inference* (e.g., King 1997; Freedman 1999). The *ecological inference problem*, then, applies to many questions of practical interest—e.g., whether members of different racial groups utilize early voting methods at differential rates—for which some or all of the desired data are not directly available at the desired scales. For instance, because the vast majority of states do not capture data related to a voter's race or ethnicity during the registration process, racial group disparities in voter participation or the type of ballot cast cannot be determined from most state registration records. Rather, to assess these questions, voter records need to be aggregated and merged with data from other sources, such as the U.S. Census, that collect racial information on a superset (voting age persons) of the target population (voters). Taken together, these different data layers provide a means to elucidate details about the unobserved quantity of interest.

However, simply comparing the way a given quantity of interest (early voting rate) covaries across observational units with the size of a given demographic group (African Americans of voting age), and then concluding that observable aggregate relationships also hold for respective individuals, is known as committing an *ecological fallacy*. Stated alternatively, there is no scientifically principled reason to assume that overall group attributes are possessed by all members of the respective group. Yet despite this problem, inferences based on aggregate data are often necessary in social science research (King 1997). Hence, a large body of literature is devoted to overcoming the ecological inference problem (e.g., Duncan and Davis 1953; Goodman 1953, 1959; Grofman and Migalski 1988; Freedman et al. 1991; King 1997; Calvo and Escolar 2003).

In this paper we utilize King's (1997) "solution" to the ecological inference problem (King's EI[6]) to perform the analysis. We select King's EI with the following points in mind. First, it has been accepted by federal courts as the basis for expert testimony about racial voting and participation patterns in voting rights cases (Greiner 2007). Second, it has efficiency advantages over earlier methods of "ecological regression", in that it incorporates both deterministic and probabilistic components into the estimation process (Tam Cho 1998). And third, the method is widely used by political scientists who conduct empirical studies of group voting behavior (e.g., Withers 2001; Orey et al. 2011).

B. Data

The census tract is the unit of analysis for this study for convenience with respect to data availability. For each census tract, then, four general quantities are collected to calibrate the EI analysis: (1) the number of voters who cast early ballots in the 2008 General election; (2) the number of voters who

participated in the 2008 General Election; (3) the size of the Voting Age Population (VAP); and (4) a percentage breakdown of VAP by selected racial group.

Regarding quantities (1) and (2), individual voters who participated in the 2008 General Election, and a list of individual voters who cast early in person ballots during that election, the datasets were obtained from the Northeast Ohio Voter Advocates ("NOVA"), who in turn received the data through a public information request made to the Cuyahoga County Board of Elections ("CCBOE"). A third list of all voters who cast a ballot by mail was received from the CCBOE in a supplemental

request made by the authors of this brief.[7] All voter records were batch geocoded using the US Streets Geocode Service address locator in ESRI's ArcGIS 10. Counts of the resultant point data were then aggregated to the census tract level, and current U.S. Census data were collected on the VAPs for selected racial groups (quantities 3 and 4).[8] Table 2 summarizes the key information.

Table 2. Descriptive Statistics

	Actual	NOVA/ CCBOE Files	Final [Geocoded] Sample	% Actual in Final Sample
Voting Age Population	989,860	..	989,679	>99.9%
NH[a] White VAP	640,799	..	640,799	100.0%
NH[a] Black VAP	270,756	..	270,579	99.9%
All Votes	672,750	669,753	667,339	99.2%
Early in Person Votes	54,794[b]	54,794	54,537	99.5%
Votes by Mail	211,729	210,715	207,120	97.8%
# of Census Tracts (2010)[c]	446	..	442	99.1%

[a] NH = Non-Hispanic; [b] It is assumed that the number of records in the NOVA file (54,794), which was generated by the CCBOE, is accurate; [c] Four census tracts were dropped from the analysis for having (i) zero VAP or (ii) a number of voters geocoded to it that exceeded the VAP.

Alongside the summary data in Table 2, we report a handful of negligible discrepancies between the voter data provided by the CCBOE and the official turnout results for the 2008 General Election available on the Board's website. Because the voter files did not come with metadata indicating how queries to identify 2008 General Election voters were performed, we cannot speak to the exact reasons for the discrepancies; however, given that the differences are sufficiently small—i.e., over 99% of the total votes are accounted for in the final dataset—it is reasonable to assume that they will not have an effect on the analytical results. Relatedly, Table 2 reports the percentages of voters whose addresses were successfully matched during the geocoding process described above. These again are sufficiently high percentages to permit the assumption that omitting the unmatched records will not impact the analysis.

IV. RESULTS

The global results from estimating EI models calibrated with the data discussed above are presented in Table 3.[9] Falling in line with contemporary academic literature (e.g., Gronke et al. 2009) and reports by civil rights groups (NAACP 2011) that study the effects of Barack Obama's candidacy on minority electoral participation in 2008, we estimate a disappearing turnout gap between minorities and whites. In fact, countywide African American turnout was slightly greater than white turnout, with the former group approximately 1.03 times more likely to vote than the latter. While small, this difference is of practical importance, given that whites have historically and consistently participated at higher rates than non-whites (e.g., NAACP 2011). Hence the turnout estimates support the narrative that the 2008 electorate included more traditionally underrepresented voters than in all previous Presidential elections, most likely due to the historic candidacy and campaign of Barack Obama (e.g., Gronke et al. 2009).

Table 3. Aggregate EI estimates

	EI estimate	standard error	Approximate # of people
NH White VAP Turnout	68.4%	0.0039	437,990
NH Black VAP Turnout	70.6%	0.0027	190,880
Non-White VAP Turnout	65.7%	0.0071	229,349
NH White EIP[a]	0.8%	0.0003	see
NH Black EIP[a]	22.3%	0.0008	worksheet (1)
Non-White EIP[a]	22.2%	0.0007	below
NH White VBM[b]	36.2%	0.0010	see
NH Black VBM[b]	21.4%	0.0020	worksheet (2)
Non-White VBM[b]	21.3%	0.0019	below

(1) Racial Breakdown of EIP[a]	NH White (% of EIP)	NH Black (% of EIP)	All Non-White (% of EIP)
All sample EIP = 54,537	3,664 (6.7%)	42,475 (77.9%)	50,873 (93.3%)

(2) Racial Breakdown of VBM[b]	NH White (% of EIP)	NH Black (% of EIP)	All Non-White (% of EIP)
All sample VBM = 207,120	158,331 (76.4%)	40,905 (19.7%)	48,789 (23.6%)

[a] EIP = Early in person; [b] VBM = Vote by mail

More central to the current research, however, we estimate that intra-group rates of EIP voting were not nearly as racially balanced as the countywide turnout rates. To be precise, African Americans in Cuyahoga County are estimated to have utilized EIP voting at rates approximately 26.6 times greater than white voters. That is, whereas the results suggest that over 22% of African Americans who voted did so early in person, slightly less than 1% of white voters exercised the same option. Distributing these rates through the estimated sizes of the group electorates, African Americans accounted for nearly 78% of all early in person voters, compared to less than 7% for whites.

By contrast, white voters exercised the VBM option at greater rates than African Americans. Particularly, an estimated 36.2% of white voters voted early by mail compared to approximately 21.4% of African American voters. Overall, then, 37% of estimated white voters and nearly 44% of estimated African American voters cast an early ballot in the 2008 General Election. Although these rates are somewhat similar—i.e., around two-fifths of both groups voted absentee—recall that only EIP is to be scaled back under the proposed rule changes. Accordingly, a significantly larger percentage of African American absentee voters will be impacted relative to whites: compared to just 2.3% of all white absentee voters, more than half of all African American convenience voters voted early in person.

V. CONCLUSIONS

The results described in Section IV provide empirical evidence that African Americans have utilized at least one form of early voting at much higher rates than white voters. Specifically, *relative to whites, African American voters in Cuyahoga County, Ohio disproportionately voted early in person during the 2008 General election.*

In light of previous empirical work (e.g., Alvarez et al. 2011; Kropf 2012), as well as anecdotal evidence from electoral politics (e.g., Gustafson 2008), this finding is not altogether unexpected. What does make the results somewhat surprising, however, is the magnitude of the estimated disproportionality between white and non-white usage of early in person voting. Despite accounting for a mere 28.6% of the estimated overall vote, African American voters cast an estimated 77.9% of all EIP ballots in Cuyahoga County in 2008. This figure is significantly higher than comparable estimates derived using a proportional rule—i.e., by assuming that the proportion of voting age persons within a given observational unit who are African American is strictly equal to the proportion of early in person votes cast by African Americans in the same area (e.g., Robbins and Salling 2012; Brill et al. 2012). Note, however, that the federal court decision temporarily blocking Ohio's proposed early voting changes relied on such proportional estimates as evidence. In that context, the findings in this brief imply that the extent of the adjudged "injury" to minority voters from Ohio's proposed rule changes may be even greater than what the data available to the court showed (*Obama for America v. Husted* 2012, see Opinion and Order Granting Preliminary Injunction).

While this is not to say that Cuyahoga County minority voters will necessarily be precluded from voting because of the proposed state law changes, a reasonable interpretation of the results is that eliminating opportunities to vote early in person effectively raises the cost of voting for more African Americans than for whites. This is the case because the former group contains substantially

more EIP voters, in both relative and absolute senses, than the latter. Hence, more minority voters in Cuyahoga County will face added adjustment costs under the new rules. That being said, political science literature collectively agrees that voting costs and turnout are inversely related (Downs 1957; Riker and Ordeshook 1968; Highton 2004). Therefore, it is most likely the case that negative turnout effects from the shortened EIP period, should they occur, will be driven by decreases in minority participation. Put differently, regardless of the *intent* of the early voting law changes, based on the racial disparities observed in early voting behavior, the new rules are likely to have a discriminatory *effect* in Ohio's largest county. In light of these findings it would be prudent for state and county officials to critically reevaluate their decisions to scale back EIP voting operations.

APPENDIX

King's basic EI approach (King 1997) is used to estimate the following sets of models:

$$T_i = \beta_i^w X_i + \beta_i^{nw}(1 - X_i) \quad [1a]$$

$$EIP_i = \lambda_i^w(\beta_i^w X_i N_i) + \lambda_i^{nw}[\beta_i^{nw}(1 - X_i)N_i] \quad [2a]$$

$$VBM_i = \delta_i^w(\beta_i^w X_i N_i) + \delta_i^{nw}[\beta_i^{nw}(1 - X_i)N_i] \quad [3a]$$

$$T_i = \beta_i^b Z_i + \beta_i^{nb}(1 - Z_i) \quad [1b]$$

$$EIP_i = \lambda_i^b(\beta_i^b Z_i N_i) + \lambda_i^{nb}\left[\beta_i^{nb}(1 - Z_i)N_i\right] \quad [2b]$$

$$VBM_i = \delta_i^b(\beta_i^b Z_i N_i) + \delta_i^{nb}\left[\beta_i^{nb}(1 - Z_i)N_i\right] \quad [3b]$$

where N_i is the total VAP in census tract i; T_i is the fraction of N_i that voted in the election; X_i is the fraction of N_i that is white and non-Hispanic; β_i^w is the EI-estimated fraction of white VAP in tract i that voted (and where white VAP is equal to $[X_i N_i]$); β_i^{nw} is the EI-estimated fraction of *non*-white VAP in tract i that voted; EIP_i is the number of voters in tract i that cast an early in person ballot; λ_i^w is the EI-estimated fraction of white voters in tract i that voted early in person; λ_i^{nw} is the EI-estimated fraction of *non*-white voters in tract i that voted early in person; VBM_i is the number of voters in tract i that cast an absentee ballot by mail; δ_i^w is the EI-estimated fraction of white voters in tract i that voted absentee by mail; δ_i^{nw} is the EI-estimated fraction of *non*-white voters in tract i that voted absentee by mail; and all of the above interpretations hold for Equations 1b-3b, where the superscript 'b' refers to the non-Hispanic black or African American demographic group, and Z_i is the fraction of N_i that is African American.

NOTES

1. "Secretary of State Jon Husted Calls for Elections Reform Legislation," Feb. 28, 2012, http://www.sos.state.oh.us/mediaCenter/2011/20110228.aspx (Accessed September 22, 2012).

2. In addition to the reductions in early voting, the Ready 2012 proposals would have reduced the absentee voting period from 35 to 21 days prior to an election, eliminated "Golden Week" which allows voters to register to vote and vote early in-person at the same time, and prohibited county boards of election from encouraging absentee ballot participation by prohibiting counties from sending unsolicited absentee ballot applications, and from paying return postage on applications or voted ballots. *Id.*

3. HB 194, 126th Leg. (amending Ohio Rev. Code §§ 3509.02(A), 3509.03, and 3509.04(B)). See also Directive 2012-35 (stating "[I]n 2011, I urged the Ohio General Assembly to create uniform days and hours for in person absentee voting across the state. The result was House Bill 194...")

4. As originally introduced and passed in the Ohio House of Representatives, HB 194 established the tenth day prior to an election as the start of early voting. The bill was amended by the Ohio Senate Government Oversight and Reform Committee to establish the start of early voting on the seventeenth day prior to an election. The Senate passed HB 194, as amended, and the Senate version was signed into law by Governor Kasich.

5. HB 194 attempted to set the early voting deadline on the Friday before an election by adding a totally new provision to Ohio Rev. Code § 3509.01. The drafters neglected to amend Ohio Rev. Code § 3509.03, which contained the original language setting the early voting deadline for the Monday before an election.

6. For a full description of these methods, refer to King (1997).

7. Note that the latter datasets mentioned here are subsets of the former.

8. The decision to use full count VAP data from the 2010 U.S. Census is justified on two primary grounds. First, federal district court judges in *Obama for America v. Husted* (2012) recently relied on a study of the 2008 General election in their judicial opinion, where the cited study used 2010 Census VAP data. Second, 2008 census tract populations are only available as estimates, at best, in the 2005-2008, three-year American Community Survey (ACS); however, not all Cuyahoga County census tracts are included in the three-year ACS dataset.

9. The EI models are presented at the end of this brief in an appendix.

References

Alvarez, R.M., I. Levin, and J.A. Sinclair. 2012. "Making Voting Easier: Convenience Voting in the 2008 Presidential Election." *Political Research Quarterly* 65 (2): 248-262.

Brennan Center for Justice. 2011. *Voting Law Changes in 2012*. New York, NY: Brennan Center for Justice at the New York University School of Law. Available at http://brennan.3cdn.net/92635ddafbc09e8d88_i3m6bjdeh.pdf

Brennan Center for Justice. 2012. *2012 Voting Law Changes: Passed and pending legislation that has the potential to suppress the vote*. September 7, 2012 Update, New York, NY: New York University School of Law. Available at http://brennan.3cdn.net/57b1b902542cb927d9_g1m6bn3df.pdf.

Brill, D., W. Anthony, and D. Walch. 2012. *2008 Early In-Person Voting*. Columbus, OH: Franklin County Board of Elections. Available at http://www.scribd.com/doc/102466324/2008-Early-In-Person-Voting-in-Franklin-County-Ohio.

Calvo, E., and M. Escolar. 2003. "The Local Voter: A geographically weighted approach to ecological inference." *American Journal of Political Science* 47 (1): 189-204.

Downs, A. 1957. *An Economic Theory of Democracy*. New York: Harper.

Duncan, O.D., and B. Davis. 1953. "An Alternative to Ecological Correlation." *American Sociological Review* 18: 665-66.

Freedman, D.A. 1999. *Ecological Inference and the Ecological Fallacy*. Technical Report No. 549, International Encyclopedia of the Social and Behavioral Sciences. Available at http://statistics.berkeley.edu/tech-reports/549.pdf.

Freedman, D.A., et al. 1991. "Ecological regression and voting rights." *Evaluation Review* 15: 673-711.

Goodman, L. 1953. "Ecological regressions and the behavior of individuals." *American Sociological Review* 18: 663-66.

Goodman, L. 1959. "Some alternatives to ecological correlation." *American Journal of Sociology* 64: 610-24.

Greiner, D. J. 2007. "Ecological Inference in Voting Rights Act Disputes: Where are we now, and where do we want to be?" *Jurimetrics* 47: 115-67.

Grofman, B., and M. Migalski. 1988. "Estimating the Extent of Racially Polarized Voting in Multicandidate Contests." *Sociological Methods Research* 16: 427-453.

Gronke, P. 2008. "Early Voting Reforms and American Elections." *William & Mary Bill of Rights Journal* 17: 423-451.

Gronke, P., et al. 2009. "Convenience Voting." *Annual Review of Political Science* 11: 437-455.

Gronke, P., J. Hicks, and D.K. Toffey. 2009. "N=1? The anomalous 2008 election and lessons for reform." *ASPA Annual Meeting Paper*. Toronto. Available at http://ssrn.com/abstract=1451900.

Gustafson, D. 2008. "Obama Supporters, Black Voters Push Early Voting to Record Numbers." *PBS Newshour*. Arlington: PBS, November 3, 2008. http://www.pbs.org/newshour/vote2008/reportersblog/2008/11/obama_supporters_black_voters.html.

Highton, B. 2004. "Voter Registration and Turnout in the United States." *Perspectives on Politics* 2: 507-515. Kropf, M.E. 2012. "Does Early Voting Change the Socio-Economic Composition of the Electorate?" *Poverty & Public Policy 4* (1): Article 3.

National Association for the Advancement of Colored People (NAACP). 2011. *Defending Democracy: Confronting modern barriers to voting rights in America*. New York: NAACP Legal Defense and Educational Fund. Available at http://naacp.3cdn.net/67065c25be9ae43367_mlbrsy48b.pdf.

Obama for America v. Husted. 2:12cv00636, U.S.D.C., Southern District of Ohio, 2012.

Orey, B.D. et al. 2011. "White Support for Racial Referenda in the Deep South." *Politics and Policy* 39 (4): 539-558.

Riker, W.H., and P.C. Ordeshook. 1968. "A Theory of the Calculus of Voting." *American Political Science Review* 62: 25-42.

Robbins, N., and M. Salling. 2012. *Racial and ethnic proportions of early in-person voters in Cuyahoga County, General Election 2008, and implications for 2012*. Cleveland: Northeast Ohio Voter Advocates. Available at http://nova-ohio.org/Racial%20and%20ethnic%20proportions%20of%20early%20in-person%20voting.pdf

Tam Cho, Wendy K. 1998. "Iff the Assumption Fits..." *Political Analysis* 7: 143-63.

1401 New York Avenue, NW, Suite 400
Washington, D.C. 20005
Phone: (202) 662-8600
Toll Free: (888) 299-5227
Fax: (202) 783-0857
www.lawyerscommittee.org

twitter.com/LawyersComm
facebook.com/LawyersCommittee