

Mot. Seq. 001, ____

EXHIBIT N

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

Williams et al. v. Board of Elections of the State of New York et al.

Index No. 164002/2025

RESPONSE TO EXPERT REPORT OF MAXWELL PALMER

D. STEPHEN VOSS

I. INTRODUCTION & QUALIFICATIONS

- A. I am a political scientist who earned his Ph.D. from Harvard University in 2000, with **political methodology** (i.e., quantitative analysis) as my focus field.
- B. I currently am employed with the University of Kentucky's Department of Political Science, where I am a **senior professor** at the Associate rank. I am part of my university department's rotation of methods instructors, having taught graduate methods most recently in Fall 2024. I fill two administrative positions for my department: Internship Director and Publicity Coordinator. I am one of the three social scientists on our college's Educational Policy Committee, and one of my college's two Faculty Senators at the university level.
- C. I have served as **president of the Kentucky Political Science Association** and I co-founded that association's journal, the *Commonwealth Review of Political Science*.
- D. My dissertation explored **elections and voting behavior** related to race & ethnicity,¹ and I have published scholarly work in that topical area from 1996 through the current year, including in peer-reviewed disciplinary journals.² Some of that work included analysis focused on redistricting and/or voting rights.³
- E. My primary Ph.D. advisor was Gary King, originator of commonly used methods and software for conducting **ecological inference**. I was on the ground floor when King wrote the 1997 book introducing his method, as illustrated by the use of my data in his book's opening analysis,⁴ and I authored a solo chapter in King's follow-up edited volume.⁵ I employed King's EI software throughout my dissertation,⁶ and I have published work using EI in invited,⁷ peer-reviewed,⁸ and trade articles.⁹
- F. Another of my dissertation advisors was Bradley Palmquist, also a specialist in ecological inference. A conference paper Palmquist and I coauthored to help introduce EI has enjoyed widespread visibility due to its influence on a

prominent racial-politics scholar; it has been “read” (i.e., accessed) more than 5,000 times just from one source: the scholarly archive site ResearchGate.¹⁰

- G. I am interviewed frequently by state, national, and international news organizations as a **non-partisan commentator**. I work as a political analyst for Spectrum One News, after a long stint as an analyst for ABC-36 (WTVQ). I am a recurring guest and periodic guest host on WVLK talk radio, and I have been a recurring columnist for a progressive outlet, the *Kentucky Lantern*. Students at UK recognize my non-partisan orientation. I’ve served as faculty advisor for student groups across the political spectrum – including, currently, both UK’s College Democrats and College Republicans – as well as UK’s Phi Alpha Delta pre-law chapter. In the past, I advised the Moderates Club and the NAACP chapter.
- H. Although I do not pursue, and in the past have usually turned down, offers to engage in consulting work, I have served as a **consultant and expert witness** in a handful of redistricting and voting-rights cases, starting with an Indianapolis case early in my career and most recently (not counting ongoing litigation) a Tampa case. About half of those cases required me to conduct and evaluate ecological inferences. I’ve also been admitted as a quantitative-analysis expert in cases unconnected to elections and voting (e.g., for automobile risk analysis), and I have been hired as a data scientist by public & private entities focused on policy.
- I. Accompanying this expert report as Appendix A is my CV, which, among other things, lists my publications and cases in which I provided expert testimony.

II. SCOPE OF WORK & MATERIALS RELIED ON

- A. Counsel retained me to evaluate the report submitted by Dr. Maxwell Palmer, especially his use of ecological inference to estimate racial/ethnic voting behavior in New York City. In evaluating the Palmer analysis, my main charge was to assess (1) whether Dr. Palmer's analysis used scientific best practices, and (2) whether Dr. Palmer's methodology could be trusted to produce accurate results. By extension, because the Palmer report analyzed New York congressional maps, I was expected to evaluate both the enacted New York congressional districts and illustrative maps developed by plaintiff's expert William Cooper.
- B. To verify and debug the Palmer analysis itself, I use the same programming language (R), the same ecological-inference package (eiPack with command ei.MD.bayes), and the same racial/ethnic and vote-choice data that Dr. Palmer employed. Only when I extend past CD11 and the rival illustrative district do I use other Census data and election data (provided by Dr. Sean Trende through counsel), as well as other ecological-inference algorithms commonly used in the field (i.e., so-called Iterative EI, and the package EI-COMPARE). I also draw on ecological inferences for New York made available to the public through the Web site VoteHub, partly as a verification of my work, and partly because of the site's excellent mapping capabilities.
- C. To set up my analysis of New York City's congressional districts, I draw on another online elections site commonly used in the field, Dave's Redistricting application. DRA uses different, and slightly older, election results than Dr. Palmer's when determining partisanship in New York.¹¹ Nonetheless, I will not be using DRA data for any of my ecological-inference work, only to aid with background and visualizations.
- D. As compensation for accepting this assignment, I was retained at a pay scale of \$400 per hour billed, with an additional \$50 for time spent under oath. I was assisted in this work by a part-time employee of my consulting partnership, an experienced R programmer and simulation expert named Dr. Corrine F. Elliott (Ph.D. in Statistics, UC Berkeley). Neither her compensation nor mine was dependent on the results of our analysis or on the conclusions in this report. Because I supervised and vetted all work, I take responsibility for everything presented here.

III. SUMMARY OF OPINIONS OFFERED

- A. My technical report accompanies this document as Appendix B. It reaches a number of conclusions that I believe might be relevant to the litigation in question.
- B. I was quickly and easily able to replicate Dr. Palmer's ecological-inference analysis, thanks to the highly professional way he conducted his work and submitted his materials through disclosure. My results from that replication were substantively identical to the results he reports. Dr. Palmer did what he said he did, and his results were as he characterized them.
- C. Unfortunately, as my report explains and documents, some of the decisions Dr. Palmer made for his analysis do not conform to best practices with ecological-inference research. Addressing those shortcomings results in estimates of voting behavior by race and ethnicity – and, therefore, estimates of group cohesion and racially polarized voting – that differ in substantive ways from what Dr. Palmer reports.
- D. Dr. Palmer employs a simple or “naïve” version of ecological inference that assumes members of a group vote the same way everywhere (aside from random variation and the occasional quirky deviation from the norm). Yet an evaluation of the data Dr. Palmer used – encapsulating only Staten Island and parts of Brooklyn and lower Manhattan – suggests that this assumption is false. Hispanic and Asian voters do not appear to be politically uniform across Staten Island and (perhaps stating the obvious) Whites voters on most of Staten Island hold partisan preferences distinct from the White voters elsewhere in New York City, especially those living in lower Manhattan.
- E. Neglecting to allow for the likelihood that racial/ethnic groups are internally diverse in systematic ways can result in ecological inferences plagued by what's called aggregation bias. If Asians or Hispanics are more likely to vote Republican when they live near one group and more likely to vote Democratic when they live near another group – that is, when vote choice is contextual in some way – then the pattern will be attributed falsely to the other group.
- F. The statistical package Dr. Palmer employed provides a simple way to (1) soften assumptions of homogeneity within racial/ethnic groups and instead (2) invite the methodology to take into account possible contextual patterns. (I've needed to make such adjustments in all of my peer-reviewed work using ecological inference, because racial and ethnic groups rarely vote the same way everywhere in a state or region.) When I repeated Dr. Palmer's analysis with that simple adjustment, the ecological inferences changed, putting them more in line with ecological inferences for New York City reported by VoteHub (which employed an even more complex methodology to adjust for aggregation bias). Dr. Palmer apparently missed some of the rich contextual variation in how Asians, Hispanics, and Whites vote.
- G. Dr. Palmer pays little attention to Asian voters. They appear in a pair of tables near the end of his report, as well as in a turnout graph, but they are excluded

entirely from his discussion and from most of his graphs/figures. Their erasure is remarkable, given that the main thing separating an analysis of racially polarized voting from an analysis of whether the Black/Hispanic candidate of choice usually will lose is how everyone else votes. Insofar as Dr. Palmer's simple ecological inferences result in instability or error in how he estimates Asian (and Hispanic) voting preferences, it also will undermine the usefulness of the analysis for determining whether a candidate preferred by minority voters usually will be defeated.

- H. Even if one does not reject Dr. Palmer's simpler ecological inferences on behalf of my context-based results – and it's true that I'm limited in my ability to document their relative merits, because Dr. Palmer's code does not retain intermediate results – it should be troubling that I am getting estimates well outside of his "confidence intervals" despite tweaking only one feature of the computer code. At best, Dr. Palmer's ecological inferences are reported with false precision, and the simulations underlying his results exhibit unreliable levels of instability.
- I. Dr. Palmer's decision to restrict his analysis to a single congressional district's precincts – either only the precincts in the current CD11 or only the illustrative district's precincts – does not conform to best practices. There is no consensus answer as to how far out an analyst ought to zoom to obtain best results: Being too inclusive, for example by conducting ecological inference for an entire state all at once, can skew results just as zooming in too closely can. Still, Dr. Palmer should have used more than just the small number of precincts with which he worked, even if all he and the Court cared about was the voting behavior or the likely election outcomes in a single district.
- J. Of course, the need to expand the scope of the data becomes even more compelling if, as a matter of law, an analysis of group cohesion and of racially polarized voting (RPV) needs to extend beyond a single legislative district – which, as a scholar of elections, I believe it ought. Focusing on only a single district to judge racial gerrymandering renders a vote-dilution analysis practically worthless, because mapmakers can manipulate the level of racial/ethnic voting cohesion – by separating or merging like-minded members of a demographic group – just as easily as they can manipulate the partisan slant of a district. Dr. Palmer's analysis illustrates the instability of such an analysis of RPV, with White voters becoming less cohesive and Asian voters becoming more cohesive in Staten Island's district after Cooper reshapes it. Focusing only on one district will give a misleading picture of how cohesive a racial or ethnic group actually is in the area where mapmakers were working, and will give a distorted view of the level of racial polarization as well.
- K. Perhaps more important, if the goal is free and fair elections: Judging racial polarization using a single legislative seat or focusing solely on likely election outcomes in a single district risks imposing active discrimination against White (and in places like Staten Island, also Asian) voters. Whereas pockets of Black or Hispanic voters could opt to vote Republican with no negative

consequence, should they wish to do so, the only way White (and Asian) voters would be allowed regularly to opt for Republican representation in most metro areas would be if they were subject to racial gerrymandering (by packing those Republicans into an especially homogenous district, thereby diluting the vote of their racial/ethnic groups) or perhaps partisan gerrymandering (in the unlikely event they can be packed into a district with an uncharacteristically Republican minority population, diluting the Republican vote). The case at hand illustrates this dynamic. Cooper's illustrative map makes the single-district polarization numbers look better not because it groups protected minority populations who have been separated from each other artificially by district lines – the original purpose for fighting vote dilution – but instead because the White and Asian Republicans of Staten Island are cracked away from like-minded voters right across a bridge and instead submerged with White and Asian Manhattanites across the water who will cancel out their votes.

- L. Within the limitations of the time and data provided to me, therefore, I conducted ecological inferences for all of the congressional districts centered in New York City. I conclude that New York City's congressional districts as a whole do not exhibit racially polarized voting, so the candidates of choice preferred by African-American and Hispanic voters are not usually going to be defeated. White voting is not cohesive, and neither Whites nor Asians consistently vote against the candidates preferred by African-American and Hispanic citizens. To repeat: My extended analysis of New York City voting shows that White voters are not cohesive in the region, that voting behavior is not racially polarized across the city as a whole, and that on the whole, people of color do not face an especially low likelihood of electing their candidates of choice in general elections. That conclusion extends to the entire state of New York as well, if as a matter of law that is the proper scope of analysis – as judged not only by numerous pre-election polls and by VoteHub's ecological inferences for New York state, but also because of the Democratic Party's dominance statewide.

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- ¹⁰ See Palmquist and Voss, "Racial Polarization and Turnout in Louisiana: New Insights from Aggregate Data Analysis," *Midwest Political Science Association* (April 1996) https://www.researchgate.net/publication/268341180_Racial_Polarization_and_Turnout_in_Louisiana_New_Insights_from_Aggregate_Data_Analysis.
- ¹¹ <https://davesredistricting.org/maps#aboutdata>.

RESPONSE TO EXPERT REPORT OF MAXWELL PALMER

D. STEPHEN VOSS

APPENDIX A: CURRICULUM VITAE

VOSS RESPONSE TO MAXWELL PALMER (APPENDIX A)

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EDUCATION

Ph.D., Harvard University: Government 1998-2000

Dissertation: “Familiarity Doesn’t Breed Contempt:
The Political Geography of Racial Polarization”

Committee: Gary King (chair), James Alt, Bradley Palmquist

A.M., Harvard University: Government 1990-1993; 1995-1998

Focus Field: Political Methodology (advisor: Gary King)

B.A., Louisiana State University: History, minor in Political Science 1986-1990

B.A.J., Louisiana State University: (Print) Journalism, minor in Sociology 1986-1990

Graduated: *Summa Cum Laude*

RESEARCH (ORC ID #0000-0001-6933-0268)

Peer-Reviewed Articles, Books, and Chapters

Morina, Dastid, Ridvan Peshkopia, and D. Stephen Voss. 2025. “You Can Go Your Own Way: How Transit-Country Migration Attitudes Are Influenced by European Union Ideals.” *Journal of International Migration and Integration*. Published online March 25. <https://doi.org/10.1007/s12134-025-01254-0>.

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Selected Conference Involvement (excludes papers listed elsewhere)

2025 Presenter (with Tasnia Symoom), “The Dangers of Denim: Attitudes toward Southern Asian Women Who Wear Western Garb,” Kentucky Political Science Association. A rewrite is scheduled to be presented at the 2026 Southern Political Science Association meeting.

2025 Panelist, “Elections Roundtable,” Kentucky Political Science Association.

2025 Panel Chair & Discussion, Kentucky Political Science Association.

2025 Chair & Discussant, “Public Opinion about Immigration,” Midwest Political Science Association

2025 Discussant, “Shaping Immigration Attitudes,” Midwest Political Science Association

2024 Presenter, Kentucky Political Science Association, panel on Race, Gender, and Public Law. Paper titled, “The Siege Effect: Using Spatial Measures to Inform Group-Threat Research.” With Candice Y. Wallace.

2024 Discussant, Kentucky Political Science Association, “Partisanship, the Presidency, and COVID-19.”

2024 Panelist, Kentucky Political Science Association, “Election Roundtable.”

2023 Discussant, Midwest Political Science Association, “Energy, Infrastructure, and Resource Politics.”

2023 Panelist, Kentucky Political Science Association, “Election Roundtable.”

2022 Presenter, Kentucky Political Science Association, panel on “Foreign Policy and Political Behavior.” Paper titled, “How Can You Bring a Child into This? The Effect of Triggering Threat on Ukrainian Attitudes toward Fertility.” With Celeste Beasley and Rose McDermott.

2020 Panelist, Kentucky Political Science Association, “Kentucky Politics.”

2018 Poster Advisor, Midwest Political Science Association, “Elections, Campaigns, and Candidates” session (April 6)

2018 Discussant, Midwest Political Science Association, “Representation” session.

2018 Presenter, Kentucky Political Science Association. Paper titled, “Why Does Education Lead to Increased Tolerance for Migrants.” With Anne Klette. Also panelist for “Roundtable on Kentucky Politics.”

2018 Poster Advisor, Midwest Political Science Association. Sessions on “Political Communication II” and “Politics of Immigration.”

OTHER WORKS IN PROGRESS

McDermott, Rose, and D. Stephen Voss. N.d. “Attitudes toward Gender Equality: Australia and New Zealand.” Under revise & resubmit for *Political Science* (Taylor & Francis).

Beasley, Celeste, Rose McDermott, and D. Stephen Voss. N.d. “Benevolent Sexism and Constraints on the Social Role of Post-Soviet Women: The Case of the Ukraine.”

With Rose McDermott (untitled book project): Cross-national survey research on attitudes about violence toward women. Focuses especially on the role of religion in shaping those attitudes.

Clinger, James, Scott Lasley, Joshua Tucker, and D. Stephen Voss (eds.). N.d. *Kentucky Politics and Government*. Lexington: University of Kentucky Press. Second edition.

Voss, D. Stephen, Corrine F. Elliott, and Sherelle Roberts. Forthcoming. “Seeing Red in the Bluegrass: Voting Behavior in the First Quarter of the 21st Century [working title only].” In James Clinger, Scott Lasley, Joshua Tucker, and D. Stephen Voss (eds.), *Kentucky Politics and Government*. Lexington: University of Kentucky Press. Second edition.

RELATED WORK EXPERIENCE

POLITICAL ANALYST, SPECTRUM ONE NEWS 2023-present
Appearing both live & in recorded news segments for coverage of election-related events.

CONSULTANT AND EXPERT WITNESS, Holtzman Vogel 2024-2025
Worked on a Florida redistricting case, *Hodges v. Albritton* (originally *Hodges v. Passidomo*) analyzing reports from two witnesses, one by Matthew Barreto using ecological inference & a second by Cory McCartan, as well as a Louisiana case, *Nairne v. Landry*, conducting ecological inference. Also, a consulting expert in a second Florida case.

EXPERT WITNESS, Kightlinger & Gray 2025
Worked on a civil action, *Bopp v. True the Vote*, growing out of 2020 Pennsylvania voting-rights case in which I briefly served as a non-testifying expert, *Pirkle v. Wolf*. My role initially involved evaluating and criticizing a method for trying to measure voter fraud presented by employees of TTV. In the follow-up case, I was asked to review my criticism of TTV’s methodology (as well as the presentation of it) because it was relevant to the civil dispute.

CONSULTANT AND EXPERT WITNESS, Graves Garrett Greim 2024
For a federal redistricting lawsuit in Louisiana, *Callais v. Landry*. I analyzed reports from two witnesses, especially one by Cory McCartan that used simulated congressional districts. I replicated and extended McCartan’s simulations.

NON-TESTIFYING CONSULTING EXPERT, Consovoy McCarthy 2023
I was approached to be a consultant and expert witness for a Wisconsin redistricting case, *Clark v. Wisconsin Elections Commission*, but didn’t want to take on the work. We signed a retainer agreement just in case they needed me, but while I consulted with them a couple of times by phone, they didn’t use me beyond that, so I didn’t charge them.

CONSULTANT AND EXPERT WITNESS, Kentucky Attorney General’s office 2022
For a redistricting lawsuit, *Graham v. Adams*. I analyzed reports from Harvard professor Kosuke Imai and M.I.T. professor Devin Caughey for their fidelity capturing the dynamics of Kentucky elections. Involved replicating and extending both Imai’s districting simulations and Caughey’s efficiency gap calculations.

CONSULTANT AND DATA ANALYST, Chris Wiest, Attorney at Law, PLLC 2020
For a voting-rights lawsuit, *Nemes v. Bensinger*. I produced a literature review outlining evidence on the effects of various election policies as well as a statistical analysis of Kentucky's 2020 primary-election voting rules to estimate the extent to which they were suppressing the vote.

CONSULTANT AND DATA ANALYST, Fayette County Clerk 2018
Study of Kentucky registration and turnout data, with a focus on determining the likely impact of automatic voter registration.

CONSULTANT AND DATA ANALYST, Kentucky Transportation Center 2013

CONSULTANT AND DATA ANALYST, Zooknic, Inc. 2007-2013
Specialist in matters related to Internet domain pricing and e-commerce activity:
Analyst for APTLD: Asian Internet domain sellers (Fall, 2007)
Analyst for CENTR, European Internet domain sellers (Summer 2008)
Analyst for Verisign Market (2009)
Analysis for CENTR, European Internet domain sellers (2012)

CONSULTANT AND DATA ANALYST in Voting-Rights Cases, for Kroger, Gardis, and Regas
Pirkle v. Wolf (Winter 2020-2021): non-testifying expert
Borst v. Peterson (Winter 2003): affidavit submitted; trial testimony given
Dillard v. Lawrence (Fall 2006): affidavit submitted

METHODOLOGICAL CONSULTANT in Auto Liability Cases, for Perlman Law Offices, Lexington, KY

- *Vaughn v. DaimlerChrysler* (Spring 2004): affidavit submitted
- *Weuchtl v. GM* (Fall 2004): affidavit submitted
- *Aldridge v. DaimlerChrysler* (Spring 2005): affidavit submitted
- *Robins v. Wayne* (Fall 2006): affidavit submitted
- *Harrison v. DaimlerChrysler* (Summer 2007): affidavit submitted

METHODOLOGICAL CONSULTANT in Auto Liability Cases, Coben & Associates (Scottsdale, AZ)

- *Turner v. Suburu* (Fall 2004 - Spring 2005): affidavit and phone deposition
- *Varelas v. GM* (Summer 2005): brief consultation only
- *Hinkle v. Dorel* (Fall 2005 - Spring 2006): retained, listed as rebuttal witness
- *Ricci v. Volvo* (Summer 2007): brief consultation only

ASSISTANT PROFESSOR OF POLITICAL SCIENCE, University of KY 1998-2004

TECHNICAL EDITOR, *Politics for Dummies* 2002

RESEARCH ASSISTANT FOR GARY KING. Job included: writing & editing 1992 edition of Judge-It manual, gathering data, replicating results (Budge & Hofferbert, Green & Krasno), producing graphs & charts (e.g. consulting work for Ohio redistricting case), indexing (*Designing Social Inquiry*). (1991-1995)

CONSULTANT AND DATA ANALYST for the Washington, D.C., law firm of Baker and Hostetler in
New York state redistricting litigation, working under Gary King (Summer 1992).

RESEARCH ASSISTANT FOR DEREK BOK, Harvard President Emeritus. Job included: methodological consultant for a sweeping project predicting the failure of U.S. social policies. (1992-1998)

RESEARCH ASSISTANT FOR PAUL E. PETERSON. Job included: out-of-sample forecasting for *Welfare Magnets* model to produce chapter 5 of *The Price of Federalism*; producing charts and

graphs, preparing survey data for analysis. (1991- TBA)

EDITOR-IN-CHIEF of *Let's Go: USA*, 1992 edition, the year's top-selling travel guide for the entire United States. (Summer 1991).

LEGISLATIVE AIDE to Louisiana State Sen. Sydney Nelson, D-Shreveport. Job included: legal research, legislative tracking, public relations (Spr.-Sum. 1990).

HONORS AND AWARDS

David Hughes Memorial Award 2023
Recognizes "the outstanding paper presented at the 2023 Annual Meeting of the Kentucky Political Science Association.

A&S Summer Research Fellowship 2013

Student Activities Board Faculty Partner Award 2012

College of Arts & Sciences Outstanding (Social Sciences) Teacher Award 2007-2008
College-wide award granted to one faculty member each year that recognizes excellence and outstanding contribution in all aspects of teaching, not just classroom performance.

Pi Sigma Alpha Award for Excellence in Scholarly Writing 2006
Award given to the best paper presented at the annual meeting of the Southern Political Science Association. Received with Jeff Fine and Mac Avery.

Great Teacher Award 2003
University award granted to six faculty members annually by the UK Alumni Association.

National Science Foundation Grant, "The Federal Elections Project" 2001-2002
Grant totaling \$140,000 used to collect the 2000 federal election precinct level results and match them with demographic data from the 2000 U.S. Census. Voss portion: \$50,607

Faculty Summer Research Grant 1999, 2001
Grant awarded to outstanding faculty to allow tenure-track assistant professors without summer support to launch programs or finish a project involving their research or creative activities. Voss portion \$5,000.

Lights of Liberty Award, Advocates for Self-Government 2001
Recognition for public service that advanced liberty in the United States.

Mellon Dissertation Completion Fellowship, Harvard University Spr. 1995-Fall 1996
Grant given to outstanding students toward defrayment of living costs during the pursuit of a degree.

Mellon Dissertation Research Fellowship, Harvard University Summer, 1994
Grant given to outstanding students toward defrayment of living costs during the pursuit of a degree.

Paul Solis Top Scholar Award, Louisiana State University 1990
Kappa Tau Alpha Top Scholar Award, Louisiana State University 1990

THESIS ADVISING AND MENTORING

Primary Adviser or Mentor

Kirkwood, Chris (Ph.D., still in program)
Al Amin, MD (Ph.D., still in program)
Symoom, Tasnia (Ph.D., 2025)
Taylor, Travis M. (Teaching Post-Doc, 2022-2023)
Kaiser, Steven J., Jr. (Ph.D., 2020)
Ledford, Chris (Ph.D., 2019)
East, Jack (Ph.D., 2014)

Advisory Committee

Crumrine, Chris (Ph.D., still in program)
Gantner, John (Ph.D., still in program)
Brewer, Caedmon (Ph.D., still in program)
Taylor, Travis (Ph.D., 2020)
Schoellhammer, Ralph (Ph.D., 2020)
Enjaian, Brian – Psychology (Ph.D., 2019)
Wei, Wenchi – Public Policy & Administration (Ph.D., 2019)
Poe, John (Ph.D., 2017)
Mihai Paraschiv – Economics (Ph.D., 2016)
Martin, Andrew (Ph.D., 2015)
Wallace, Candice – Geography (Ph.D., 2015)
Ouyang, Yu (Ph.D., 2015)
Morgan, Michael (Ph.D., 2014)
Ke, Yanyu (Ph.D., 2014)
Mattei, Nick – Computer Science (Ph.D., 2012)
Sharma, Ramesh (Ph.D., 2012)
Weinberg, Erik – History (Ph.D., 2012)
Peshkopia, Ridvan (Ph.D., 2011)
Kehrberg, Jason (Ph.D., 2011)
Jeong, Hanbeom (Ph.D., 2010)
Martin, Tom (Ph.D., 2008)
Bailey, Mandi Bates (Ph.D., 2007)
Fine, Jeffrey A. (Ph.D., 2006)
Bond, Maurey (M.A., 2006)
Prince, David (Ph.D., 2005)

Avery, J. Mac (Ph.D. 2004)
Eom, Kihong (Ph.D., 2003)

Also helped advise some students who eventually left their program: Donald Darmsteadt (primary advisor), Corey Chaise Camp, Samantha Ferrell, Jim Glenn, John Hajner, Cyrus Karimian, Hossein Motamedi, Daniel Partin, Chris White, Sean Chick (History), Matt Hall (History), Stephen Pickering (History), Will Stone (History)

Select Undergraduate Advising

Basinic, Dalia (Honors, 2025)
Tanner, Grace (NCUR, 2025)
Everett, Mackenzie (Honors, co-advisor, 2025)
Slis, Regan (Chellgren Research, 2025)

PROFESSIONAL AFFILIATIONS

Kentucky Political Science Association

KPSA President (2012-2013)
Executive Board member (2011-2014)
Editorial Board member, *Commonwealth Review of Political Science* (until present)
Co-editor, *Commonwealth Review of Political Science* (first two volumes)

I also, off and on, have been a member of the following:

American Political Science Association
Midwest Political Science Association
Southern Political Science Association

UNIVERSITY AND DISCIPLINARY SERVICE

Administrator, University of Kentucky Department of Political Science

2024-present Internship Director (also 2014-15, 2010-11, 2005)
2015-present Publicity Director (also 1999-2002)
2012-2014 Associate Chair
2005-2013 Director of Undergraduate Studies (sabbatical 2007-2008, hiatus 2010-2011)
2004-2005 Co-Director of Undergraduate Studies
2003-2004 Assistant Director of Undergraduate Studies

University/Faculty Senate

2025-present Faculty Senator (one of two representing the College of Arts & Sciences)
2024-2025 Provisional Faculty Senator (sole representative of College of Arts & Sciences)
2005-2007 University Senate (social science rep for the College of Arts & Sciences)

Arts & Sciences Educational Policy Committee

2025 Acting member
2009-2011 Member
2006-2007 Chair
2004-2006 Member (2004 - 2007, 2009-2011)
2003-2004 Member, Area B Curriculum Committee

Faculty Advisor for campus groups

- Phi Alpha Delta pre-law fraternity (2004-2008, 2025-present)
- UK College Democrats (2022-present)
- UK College Republicans (2024-present)
- Pi Sigma Alpha poli sci honorary (2005-2007, 2008-2010, 2011-2012)
- UK Moderates
- UK-NAACP (2001)
- UK Liberty Club (Fall 2000)

WilDCats at the Capitol, Steering Committee member (2024-2025)

Student Affairs/Success Task Force (to rewrite UK's Admin Regs related to students)
Member, 2024

Search Committee for Associate Dean of Agriculture & V.P. of Land-Grant Extension
Member, 2024

Department of Political Science Faculty Merit Evaluation Review Committee

Member, 2024-2025
Member, 2022-2023
Member, 2010-2011
Member, 2008-2009
Member, 1999-2000

College of Arts & Sciences, Political Science Acting Chair Search Committee

Chair, Spring 2023

Appeals Board Member, University of Kentucky (2018-2020)

Scholarship Committees

- T. Marshall Hahn, Jr., Graduate Fellowship Selection Committee (2005, 2009-2010, 2025)
- Schwarte, Gorman, and Jewell awards committees (2019)
- Trunzo Scholars Program (2015-2017)
- Arts & Sciences Scholarship Committee (2004-2008)
- Interdisciplinary Program (IDP) Committee, American Studies Rep. (2005-2006)

Online Colloquium Coordinator, UK Political Science Department 2020-2021

Department of Political Science Search Committee Member

Judicial Politics position, Fall, 2008

American Institutions, Fall 2006

Judicial Politics, Fall, 2006

International Relations, Fall, 2006

Chair Search Fall, 2006

American Politics senior search, Fall, 2001

Department of Political Science Field Committee – I’ve been on these so many times that I decided to remove the year-by-year listings. I’m been appointed to the exam committee in Political Methodology, American Politics, Policy Studies (chairing in 2020), and Political Behavior.

American Studies Committee

- Acting Director (2005-2006)
- Steering Committee Member (2003-2007)

UK President’s Commission on Diversity

- Member (2003 - 2006)
- Chair, Campus Environment Subcommittee (2004 - 2005)

General Education U.S. Citizenship Vetting Committee

- Chair, 2009-2010

Award Committees and Judge Panels

- UK Homecoming judge (2012)
- Singletary Service and Leadership Award Committee (2003-2006)
- Oswald Undergraduate Research Award Committee (2003)
- UK Homecoming Queen competition interviewer (2002)
- UK Homecoming King competition interviewer (2001)

Section Head

Southern Political Science Association meeting, 2009

Southern Political Science Association meeting, 2006

V.O. Key Book Award Committee

Chair, 2002

Member, 2001

Peer-Reviewed Articles for (among others):

- *American Political Science Review*
- *American Journal of Political Science*
- *Journal of Politics*
- *Political Analysis*
- *Sociological Methods and Research*
- *American Politics Quarterly/Research*
- *American Review of Politics*

- *Comparative Politics*
- *Electoral Studies*
- *International Politics*
- *Political Behavior*
- *Politics and Polity*
- *Political Research Quarterly*
- *Social Forces*
- *State Politics and Policy Quarterly*

INVITED TALKS & UNPAID PUBLIC APPEARANCES

Due to my focus on elections and voting behavior, and my long residence in Kentucky, I engage in extensive **media outreach** on behalf of UK. The result has been years of local, national, and international media appearances spanning TV, radio, and print journalism, a list much too long to provide here. I can list a few recurring gigs, though:

POLITICAL ANALYST, WVLK 590AM 92.9FM 2022-present
Weekly 45-minute appearance on the Larry Glover Live show to discuss a wide-ranging variety of topics related to politics, government, policy, and society (unpaid post).

POLITICAL ANALYST, CINCINNATI EDITION 2023-2025
Recurring appearances on public radio program to discuss topics related to politics and elections. Included appearances on 11 March 2025.

POLITICAL ANALYST, KENTUCKY EDUCATIONAL TELEVISION 2023-2025
Recurring appearances on public television station to discuss topics related to politics and elections. Included appearances on 22 November 2024.

POLITICAL ANALYST, BEHIND THE BLUE (UK PUBLIC AFFAIRS PODCAST) 2014 (?) - 2024
I've recorded regular podcasts with UK public relations during election season. Appearances on 4 November 2014, 17 May 2016, 19 October 2016, 18 January 2017, 31 October 2018, 30 October 2020, 21 April 2022, 27 October 2022, 18 November 2022 9 November 2023, 29 October 2024.

POLITICAL ANALYST, WRFL ? - 2024
Appearing in studio for coverage of elections and election-related events (unpaid post). Includes appearances on 6 November 2024.

POLITICAL ANALYST, WTVQ ABC-36 2013-2023
Appearing in studio for coverage of elections and election-related events (unpaid post).

OPINION COLUMNIST, THE KENTUCKY LANTERN (NEWS FROM THE STATES) 2023-2024
Biweekly column on politics, elections, and policy. See <https://kentuckylantern.com/author/d-stephen-voss/>

GUEST COLUMNIST, LEXINGTON HERALD-LEADER 2023
Columns on Kentucky politics and elections (unpaid post).

POLITICAL ANALYST, WKYT 2020-2021
Recurring guest on The Breakdown, a deep dive into the political topics of the day (unpaid post).

POLITICAL ANALYST, LEX-18 2019
Appeared in studio for coverage of Kentucky statewide elections (unpaid post).

Select Other Invited Appearances

- 2025 Keynote Address, Indiana Political Science Association
- 2024 Presenter, Berkeley Immigration Workshop
- 2023 Presenter, Berkeley Immigration Workshop
- 2021 Co-presenter, annual meeting of WomanStats (virtual, Texas A&M)
- 2021 Co-presenter, Gender & Political Violence Workshop (virtual, Cornell University)
- 2020 New Leaders Council of Kentucky (18 April)
- 2019 Moderator, "Gun Control," with John Lott, UK Student Activities Board (29 Jan.)
- 2018 Bluegrass Activist Alliance: "What Went Wrong in the 6th District and Where Do Progressives Go from Here." (18 Nov.)
- 2018 Japanese Embassy delegation, "Kentucky's 6th Congressional District Race." (Oct. 25)
- 2018 UK College of Arts & Sciences Dean's Circle, "Undergraduate Research." (Oct. 19)
- 2018 UK College of Arts & Sciences Ambassadors, "The Undergraduate Political Science Degree at UK." (Oct. 1)
- 2018 Bellarmine University, "Voting Rights and Election Reforms." (Sept. 17)
- 2018 Henry Clay Congress (May 17)
- 2018 New Leaders Council of Kentucky (April 21)
- 2018 UK College of Law Federalist Society, "Partisan Gerrymandering"
- 2018 Harvard University Center for Public Leadership, "Kentucky's Culture, Challenges, and Opportunities."
- 2018 UK Lewis Honors College, "American Social-Welfare Policy" (Aug. 22)
- 2017 Henry Clay Congress, "Polarization and Distrust in American Politics" (June 13)
- 2008 Moderator, election debate between the UK College Democrats & College Republicans (28 October)
- 2008 Moderator, election debate between the UK College Democrats & College Republicans (26 September)
- 2007 Moderator, policy debate between the UK College Democrats & College Republicans (Spring)
- 2006 Moderator, Mayoral Candidate Debate sponsored by UK Student Government Association (Fall)
- 2006 Moderator, SGA Presidential Candidate Debate, sponsored by UK's G-PAC (Spring)
- 2005 Moderator, screening of Steven Greenstreet's "This Divided State" (18 April)
- 2005 Moderator, SGA Presidential Candidate Debate, sponsored by UK's G-PAC (Spring)
- 2004 Discussant, screening of "School of the Americas, School of Assassins," sponsored by Amnesty International of UK (4 November)
- 2004 Moderator, election debate between the UK College Democrats & College Republicans (Fall)

Moderator (selected examples)

- Discussant, screening of Michael Moore's "Fahrenheit 9/11" sponsored by the Cats' Den (18 Oct. 2004)

- University-Affiliated Conferences and Symposia
- Presenter, “Probabilities in the Courtroom: How Expert Witnesses (Mis)Use Risk Analysis,” Judith Goldsmith’s UK colloquium on the psychology of probabilities (Fall 2008)
- Panelist, Diversity Dialogue (23 January 2007)
- Participant, General Education Process Planning Workshop (August 2006)
- Moderator and Discussant, “History of Race Relations in 1940s US,” Fifteenth Annual Bluegrass Symposium (7-8 April 2006)
- Panelist, Diversity Dialogue, “Uses, Misuses, and Abuses: Race, Ethnicity, Diversity, and Related Concepts” (30 March 2004)
- Panelist, “Education Beyond *Brown*: Future Perspectives,” UK President’s Commission on Diversity and African American Studies and Research Program (26 March 2004)
- Videographer, “Affirmative Action Forum: How Brown vs. Board of Education Affected You,” sponsored by UK-NAACP and UK President’s Commission on Diversity (18 Nov. 2003)
- Panelist, campus NAACP forum, “Affirmative Action: Under Siege and Under Fire” (26 Feb. 2003)
- Chair and Discussant, National Council on Undergraduate Research (2001)
- Presenter, How to Express & Explain Your Results,” Quantitative Methods Committee in the Social and Behavioral Sciences (7 Dec. 2000)
- Panelist, Gaines Center forum on the 2000 elections (2000)

Guest Speaker (selected examples, service to Univ. of Kentucky only)

- UK College of Arts & Sciences speaker series (17 Oct 2024)
- Ford Lecture panelist, UK Martin School (8 Oct 2024)
- Bourbon County High School Candidate Forum (6 Oct 2014)
- #TrendingTopics Debate: Immigration (2014)
- See Tomorrow speaker series, “UK’s Partnership with the Commonwealth (9 Sept 2014)
- American University of Tirana, on online instruction (2012)
- American University of Tirana, on the presidential election (2012)
- Bellarmine University, Constitution Day address (2012)
- UK College of Arts & Sciences podcast on the presidential election (Sept 2012)
- UKC 180 course on elections taught by A&S Dean Kornbluh & Prof. Kathy Kern (2012)
- Student Activities Board Trending Topics Obamacare Debate (2012)
- National Assn. of Women Business Owners, Lexington Chapter (21 Oct 2008)
- Fayette County Chapter of UK Alumni Association (2004)
- Clark County Chapter (23 Sept 2004)
- Sorority Rush, “Surviving UK Academics” (2002)
- Guest Speaker, Lexington Catholic High School, National Honor Society Induction Ceremony (20 Feb. 2002)
- Lexington Catholic English class (2001, 2002)
- Bryan Station H.S. political science class (11 Sept. 2001)
- Emerging Leader Institute Presenter (Fall 2005, Spring 2005, Fall 2004)

COMPUTER SOFTWARE

Microsoft Office (i.e., Excel, Word, Powerpoint, Outlook), STATA, R, GAUSS, Camtasia, etc.

RESPONSE TO EXPERT REPORT OF MAXWELL PALMER**D. STEPHEN VOSS****APPENDIX B: ANALYSIS AND TECHNICAL REPORT**

Counsel retained me to evaluate the report submitted by Dr. Maxwell Palmer, especially his use of ecological inference to estimate racial/ethnic voting behavior in New York City. In evaluating Palmer's analysis, I understood my main charge to be assessing:

- (1) whether Dr. Palmer's analysis used scientific best practices; and
- (2) whether Dr. Palmer's methodology and his presentation of results were reliable enough that they could be trusted to produce accurate assessments.

By extension, I was expected to analyze both the enacted New York congressional districts and the illustrative alterations put forward by plaintiff.

Finally, counsel also asked me to consider, to the extent possible, whether requiring the dissolution of New York's 11th Congressional District ("CD11") based on racial grounds might have the perverse effect of diluting the vote of other groups on a broader scale.

Successful Verification of Palmer's Estimations

The first step in verifying an expert's analysis is to determine whether it can be replicated by another expert: to see if the analyst performed the work as claimed, and to see if the results match what the analyst reported.

To verify and debug the Palmer analysis itself, I use the same programming language (R), the same ecological-inference package (eiPack with command ei.MD.bayes), and the same data that Dr. Palmer employed. In fact, Dr. Palmer disclosed materials with such a high level of transparency—clear code, clear file organization, and generally a direct connection to the results appearing in his report—that the verification stage was simpler than any replication I have attempted (either for litigation or research) in my lengthy career. Dr. Palmer's work showed a high degree of professionalism, and the critiques I will lay out do not impugn the quality of Dr. Palmer's work, only the appropriateness of his choices to the questions at hand.

I successfully replicated Dr. Palmer's analysis of CD11 and the illustrative map. The results were substantively similar to Dr. Palmer's, with my results falling within the narrow "confidence intervals" he reported in every case (see Table 1).¹ Dr. Palmer did what he said he did, and his results were as he characterized them—so any significant differences produced by my extension of Dr. Palmer's method will be the result of my explicit deviations from his approach, not due to data or software.

TABLE 1 – Dr. Palmer’s Results Replicated Easily and Almost Perfectly

		PALMER RESULTS														
		Black			White			Hispanic			Asian			Other		
Year	Office	Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)	
2017	City Comptroller	91.10%	88.9	93.1	34.80%	33.6	36.1	87.10%	83.8	89.9	50.90%	39.8	62.8	67.50%	46.3	81.1
2017	Mayor	89.10%	86.4	91.3	13.50%	12.2	14.8	79.80%	74.7	84.2	51.00%	40.4	61.1	61.00%	45.1	73.8
2017	Public Advocate	88.80%	86.3	91	26.90%	25.4	28.3	83.00%	79.1	86.2	47.50%	36.6	57.9	67.00%	51.5	78.1
2018	Attorney General	94.10%	92.7	95.3	35.90%	34.7	37.2	92.60%	90.4	94.2	79.20%	72.2	84.3	75.30%	63.7	85
2018	Governor	93.50%	91.9	94.7	36.90%	35.5	38.2	92.00%	89.9	93.6	77.50%	70	82.5	73.30%	61	82
2018	State Comptroller	94.70%	93.4	95.9	39.70%	38.5	41	93.60%	91.4	95	80.60%	73.3	85.7	77.40%	61.6	89.2
2018	U.S. Senate	94.50%	92.4	96.2	39.70%	37.6	41.5	92.20%	89	94.6	74.80%	64.9	82.9	83.00%	70.3	91.4
2019	Public Advocate	90.20%	87.2	92.8	18.70%	16.2	21	86.90%	82.2	90.4	65.10%	49.1	76.8	70.80%	56.9	82.1
2020	President	93.10%	90.6	94.9	27.00%	25.7	28.4	90.00%	86.5	93.4	73.50%	65.9	80.9	73.40%	59.4	84.6
2021	City Comptroller	86.50%	83	89.5	23.70%	22.4	24.9	77.80%	72.2	82.5	34.00%	25.6	45.5	49.20%	25.8	68
2021	Mayor	87.30%	83.8	90.2	20.50%	19.3	21.6	82.10%	77.3	86.4	43.50%	33.1	53.9	54.60%	36.3	72.1
2021	Public Advocate	88.20%	85.2	90.7	21.00%	19.8	22.2	81.90%	77.9	85.3	40.70%	30.5	53	48.20%	29.3	62.8
2022	Attorney General	90.50%	85.7	94.1	22.80%	21	25.1	89.90%	85.3	93.4	60.40%	43.8	73.3	75.70%	55.1	90.3
2022	Governor	89.80%	85	93.6	22.00%	20.1	23.9	89.30%	84.7	92.9	53.20%	37.5	69.2	77.50%	60.6	89.4
2022	State Comptroller	89.50%	84.5	93.6	25.60%	23.7	27.8	90.40%	85.9	93.8	65.50%	54.2	76.4	73.60%	51	88.6
2022	U.S. House	90.40%	85.1	94.1	24.10%	22.1	26.4	89.10%	83.9	93	57.50%	44.8	71.5	78.80%	61.4	89.5
2022	U.S. Senate	91.00%	87.1	93.9	26.40%	24.7	28	92.90%	89	95.2	64.30%	46.2	78.2	75.30%	56.3	89
2024	President	88.70%	83.1	93.4	22.20%	20.4	23.9	88.10%	81.1	92.4	49.00%	38.4	59.2	65.30%	47	85.8
2024	U.S. House	88.70%	83.6	92.9	20.00%	18.1	21.9	87.70%	81.1	92.8	51.60%	41	62	60.00%	34.8	79.3
2024	U.S. Senate	89.80%	85	93.4	25.40%	23.8	27	88.40%	82.4	93.1	58.80%	47.1	71.4	66.30%	43.4	83.6

		VERIFICATION OF PALMER RESULTS														
		Black			White			Hispanic			Asian			Other		
Year	Office	Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)	
2017	City Comptroller	90.98	88.5	92.9	34.77	33.5	36.0	86.70	82.6	90.0	53.49	39.9	66.4	66.74	52.7	77.5
2017	Mayor	88.37	85.4	90.8	13.60	12.4	14.8	79.55	74.7	83.4	53.11	40.1	64.1	59.12	43.2	71.7
2017	Public Advocate	88.53	85.5	91.1	26.94	25.4	28.4	83.11	78.8	86.5	45.89	34.6	57.8	64.45	47.8	75.2
2018	Attorney General	94.39	93.0	95.6	35.89	34.7	37.4	92.13	90.3	93.6	81.22	74.8	85.8	72.51	56.4	83.9
2018	Governor	93.62	92.0	95.0	36.79	35.5	38.2	91.94	89.9	93.7	77.71	71.2	82.6	73.83	62.0	82.9
2018	State Comptroller	94.66	93.2	95.8	39.65	38.4	40.9	93.29	91.1	94.9	81.50	73.0	86.8	78.73	67.0	86.8
2018	U.S. Senate	94.83	92.8	96.4	39.33	37.4	41.3	92.38	88.5	94.9	76.12	67.9	83.3	88.98	76.1	94.2
2019	Public Advocate	90.28	86.6	93.1	18.24	15.8	20.5	88.49	84.8	91.3	69.64	58.8	78.4	71.24	54.2	82.7
2020	President	92.87	90.7	94.7	26.95	25.7	28.2	89.73	85.7	93.2	73.80	67.4	80.4	75.37	61.3	86.4
2021	City Comptroller	86.71	83.2	89.6	23.45	22.1	24.8	77.85	72.4	82.5	40.16	30.4	50.9	48.21	29.1	65.2
2021	Mayor	86.97	83.2	89.9	20.54	19.3	21.7	81.06	76.3	85.6	42.20	32.7	53.6	55.01	37.0	70.2
2021	Public Advocate	87.41	84.5	90.0	21.27	20.1	22.4	83.49	79.3	86.7	33.00	25.3	45.7	47.68	28.9	65.6
2022	Attorney General	90.46	85.9	94.2	22.66	20.6	24.6	90.59	86.5	93.7	56.63	42.7	69.3	76.80	60.2	88.8
2022	Governor	89.64	84.3	93.7	22.23	20.5	24.0	88.69	83.5	92.5	48.88	39.1	58.3	76.48	52.2	91.3
2022	State Comptroller	90.82	85.4	94.7	26.08	23.9	28.1	89.29	84.1	93.0	58.73	43.8	73.0	73.38	51.5	86.9
2022	U.S. House	90.03	85.0	93.9	24.16	22.0	26.2	88.57	82.7	92.6	59.12	44.1	73.1	81.68	67.6	90.1
2022	U.S. Senate	91.33	87.4	94.3	26.40	24.8	28.1	91.75	87.7	94.8	65.33	45.5	78.7	79.53	62.8	90.9
2024	President	87.50	81.5	92.0	21.94	20.1	23.6	90.94	86.6	94.2	48.26	35.3	60.7	64.13	34.5	84.7
2024	U.S. House	86.63	80.9	91.2	20.17	18.3	21.9	88.32	83.2	92.2	48.00	38.9	57.3	61.44	28.2	78.0
2024	U.S. Senate	90.60	86.6	93.6	25.53	23.9	27.3	87.91	81.7	92.6	57.51	44.2	70.5	64.69	42.6	85.2

NOTE: The top table repeats the ecological inferences reported on page 10 of Dr. Palmer’s report. The bottom table is my verification of his results using his data, code, and approach to post-estimation calculations. All my verification estimates fall within his reported confidence intervals, as they should. Later differences will be as a result of modelling choices.

What Is Ecological Inference?

Before critiquing Dr. Palmer's analysis and ecological inferences, I will offer in this section a basic overview of how Dr. Gary King's EI works. I will describe the original version, not RxC version, for simplicity's sake. Understanding this part is not strictly necessary for understanding the rest of the report—so a reader could skip it without misunderstanding my conclusions—but by “showing receipts,” I am trying to minimize the extent to which a reader needs to take my criticism of Dr. Palmer's method and conclusions on authority.

Voting by secret ballot complicates any attempt to assess the racial or ethnic implications of legislative districts. We know how a locale voted, and we know the racial/ethnic makeup of the place, but we do not know the cross-tabulation between those two things. We cannot follow voters into the booth. We cannot calculate how voting differed by race and ethnicity.

Even in the best of circumstances, therefore, an analyst is stuck trying to infer how race/ethnicity cross-tabulates with vote choice—that is, how social groups differed in their voting behavior. We might know that 55.7% of CD11 usually vote Republican, and we might know that 54.1% of CD11's population is White, but we can only estimate what percentage of White voters prefer Republicans. Some of those White voters no doubt are Democrats, and some of those Republican votes no doubt came from Asian, Hispanic, and African-American voters in the district—but we are stuck estimating how each racial/ethnic group voted.

Notice the implication for voting-rights cases. Neither the level of group voting cohesion nor the level of racially polarized voting—the gap between races in how they voted—can ever be known factually. It can only be estimated using quantitative inference, and the success or failure of those inferences cannot be confirmed with certainty because we do not know the truth. Guess too high for one group, and the analyst likely is guessing too low for the other, either exaggerating or minimizing polarization.

Attempting to estimate such hidden quantities goes under the jargon “ecological inference.” Inferences of this sort, while necessary for many purposes, are problematic because they can go astray easily. A vibrant research literature going back to before my birth documents the risks associated with such analysis (*i.e.*, the risk of committing “ecological fallacies”). The methodology enjoyed a landmark breakthrough in the late 1990's, when my mentor Dr. Gary King offered “a solution to the ecological inference problem,” popularly called EI (after the implementing software), that lessened the risk of faulty ecological inferences. Later, Dr. King and collaborators developed the so-called RxC version of EI that made EI more flexible. King's method stood head and shoulders above anything in regular use before, because it employed more of the information available in low-level areal units (*e.g.*, precincts) and because it allowed researchers a

direct way to compensate for “aggregation bias” that led to fallacious conclusions.

Dr. King’s EI does not start out by estimating what is happening across the entire area of interest (for example, across an entire state, city, or congressional district). Instead, the method ideally starts with the smallest units of aggregation available at which demographic information and voting behavior can be matched (*e.g.*, a low-level Census or the precinct level), picking up on how political behavior changes as the composition of the place changes. For each smaller unit, EI takes advantage of inputs the analyst *knows to be true*—the population demographics of that small area and the election returns from that small area—to restrict what it can guess for each little unit. Ensuring that the method will not guess impossible results for each of these little spaces implicitly ensures that any estimate developed for a larger place also will be mathematically possible.

Figure 1 presents the inputs that would go into ecological inference for a hypothetical tract, expressed both as counts and as proportions, and shows as question marks the cross-tabulations we might need to know: how Hispanics voted, and how everyone else did. Here is how Dr. King’s method ensures estimates will be mathematically possible for each of these little units, a process called the method of bounds:

1. Hispanics: Trump received 1,129 votes, but only 854 non-Hispanic voters turned

FIGURE 1 – The Method of Bounds in a Heavily Hispanic Precinct

Raw Counts

	Hispanic	Non-Hispanic	
Biden	?	?	916
Trump	?	?	1129
	1191	854	2045

Vote Proportions

	Hispanic	Non-Hispanic	
Biden	?	?	0.45
Trump	?	?	0.55
	0.58	0.42	2045

out, so Trump's Hispanic support there could not have been 0%. At a minimum, he picked up $1,129 - 854 = 275$ Hispanic votes. That is, at least $275/1,191 = 23.1\%$ of Hispanic voters backed Trump. At the same time, more Hispanics showed up than Trump received votes in the tract, so Trump could not have received 100%; at least $1,191 - 1,129 = 62$ Hispanic voters picked Biden.

2. Non-Hispanics: We cannot narrow down how other voters behaved. Anything from 0% to 100% Trump support would be mathematically possible here. Still, we know a lot about how those non-Hispanic voters could have behaved because once we know Trump's rate of Hispanic support, then only one rate of non-Hispanic support would be possible. Combined Trump support is linear:

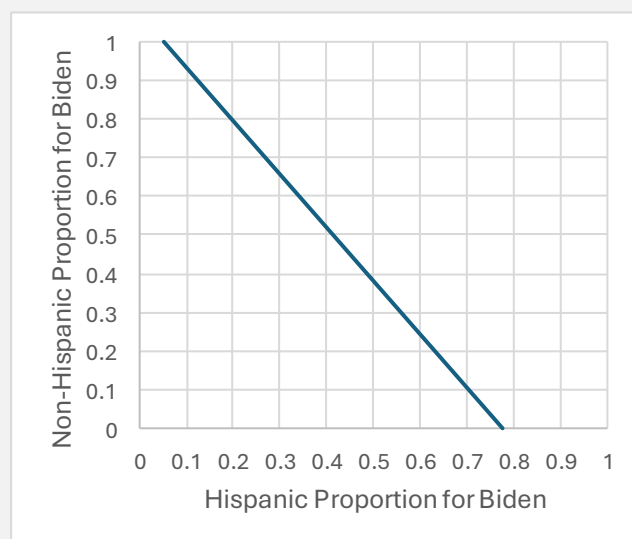
$$\begin{aligned} \text{Trump Vote} &= \text{Votes from Hispanics} &+&& \text{Votes from Non-Hispanics} \\ &= \text{Hispanic Turnout} &\times&& \text{Rate of Hispanic Support} &+ \\ &&&& \text{Non-Hispanic Turnout} &\times&& \text{Rate of Non-Hispanic Support} \end{aligned}$$

If we know the two turnout rates in the precinct, then once we hypothesize a particular level of Hispanic support, the corresponding level of non-Hispanic support could be only one number:

$$\text{Non-Hispanic Rate} = (\text{Trump Vote} - \text{Number of Hispanic Votes}) / \text{Non-Hispanic Turnout}$$

Obviously neither of these rates can fall below 0% or go higher than 100%, so if we were going to graph what is possible for this particular precinct, the result would be a line segment rather than a line. The line segment for this hypothetical precinct appears as Figure B, illustrating possible rates of support for Biden rather than Trump. The location of that line segment indicates

FIGURE B – Heavily Hispanic Precinct



what we have already determined from simple calculations: because the line segment extends from top to bottom, the non-Hispanic rate of support for Biden can range from 0 – 100%, whereas the line segment does not extend all the way from left to right—showing that Biden’s Hispanic support could not have been greater than $100 - 23.1 = 77.9\%$ (because that is the farthest right that the segment reaches), but also was not zero (because the left-hand side of the segment never reaches the left-hand side of the box).

Note that what is possible for each group depends on the size of that group in the unit’s population, with our certainty about how the group voted depending on the relative size of the group. Thus, the slope of the line segment also tells us which racial/ethnic group is most numerous in the locale. A line that is either vertical or horizontal is almost homogenous; we know precisely how one group voted but have no idea about the other group. A locale that is almost equally balanced between the two groups, as this first example was, will cut diagonally across the box, because either group could have given high or low support to the candidate. We know less about tracts such as this one. But the true combination of Hispanic and non-Hispanic support for Biden must appear somewhere on that line segment, and when Dr. King’s method tries to estimate what those rates were, it will only pick a spot somewhere along that segment.

A second example shows a second way that a small area can be especially informative. It is also closely balanced, but it is heavily lopsided toward Joe Biden. Figure

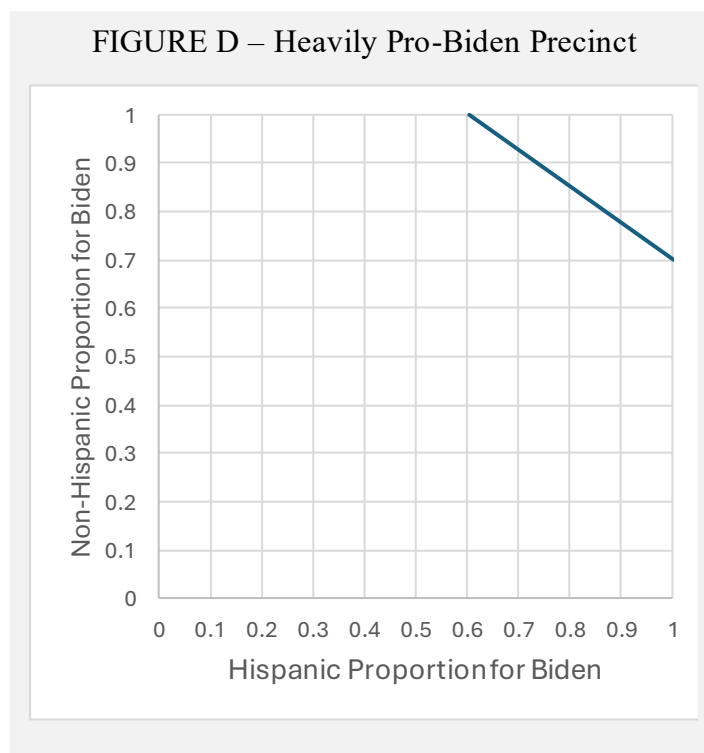
FIGURE C – The Method of Bounds in a Pro-Biden Precinct

Raw Counts

	Hispanic	Non-Hispanic	
Biden	?	?	798
Trump	?	?	242
	416	543	959

Vote Proportions

	Hispanic	Non-Hispanic	
Biden	?	?	0.83
Trump	?	?	0.25
	0.43	0.57	959

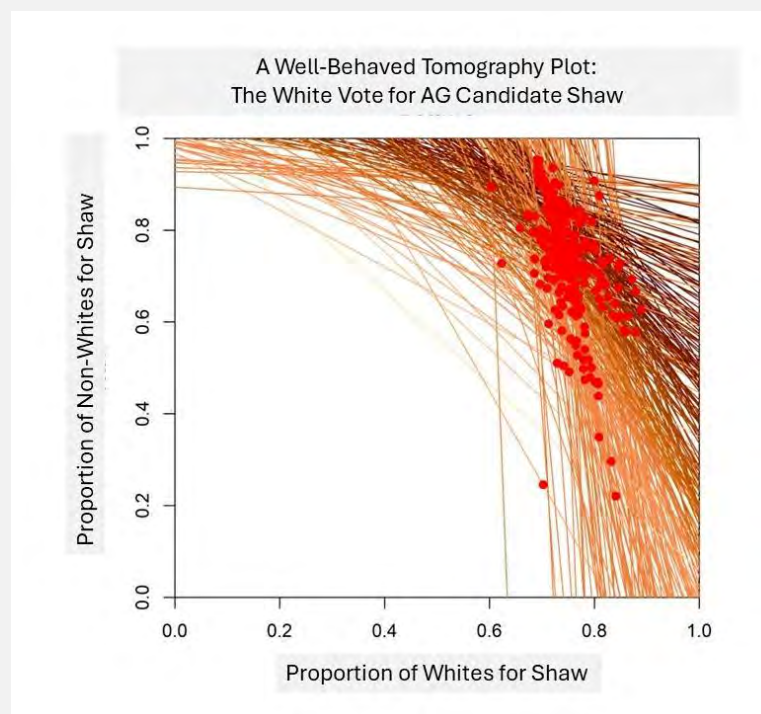


C shows why we will have a much easier time estimating political behavior in such a precinct, compared to the last. Joe Biden received 798 votes here (or 83%). Even if every Hispanic cast a vote for Biden, at least $798 - 416 = 382$ non-Hispanics (or 70.3% of them) must have sided with him. Even if every non-Hispanic backed Biden, at least $798 - 543 = 255$ (or 61.3%) of Hispanics must have backed him. So even though the line segment for this tract will be angled about like the last one, because the population is fairly evenly balanced like in the last one, we are still going to be able to narrow what is mathematically possible to a much greater extent here because of the very high level of Biden support. It will be crammed up in the top right of the square. Biden did so well that both groups mathematically must have supported him at high levels. Figure D shows all possible combinations of Hispanic and Non-Hispanic Biden support in that precinct.

If we put all the line segments for every single precinct into a single box—collecting everything that’s mathematically possible for all the precincts in one place—we get what Dr. King calls a tomography plot. The contents of such plots contain no guesses, inferences, or estimations—only what is known to be true (assuming the source data are good). An experienced EI user, who has looked at a lot of tomography plots and analyzed a large variety of datasets, can tell a lot about whether ecological inference is likely to work—and what problems might plague it—from the visualization of all those segments.

For example, Figure E shows a tomography plot capturing the White vote in a recent Florida attorney general primary. Each line segment represents one Census tract in Hillsborough County, with each tract’s true combination of White and non-White support for candidate Shaw appearing somewhere on the line segment associated with that tract.

FIGURE E –



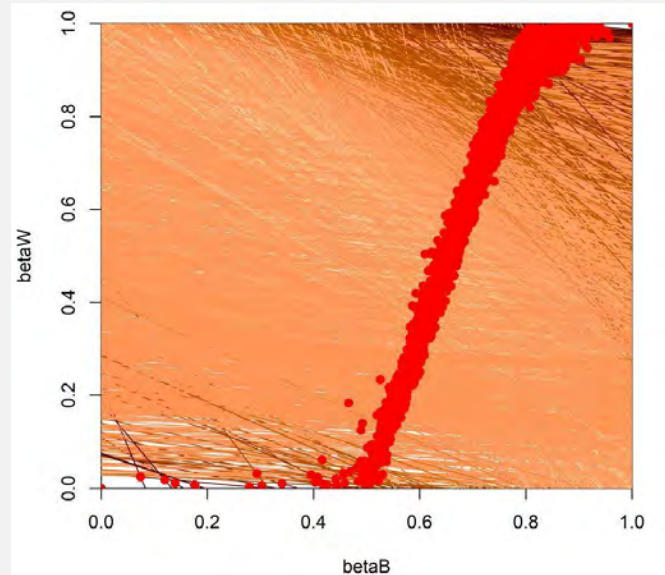
NOTE: The horizontal, lateral, and vertical lines all tend to converge around the same spot in the upper-right-hand corner of this tomography plot. For that reason, it is fairly easy to identify the region of the square where the combination of White and non-White candidate support is most likely to appear.

This circumstance lent itself to fairly strong ecological inferences because the line segments—horizontal, lateral, and vertical—all appear to pass through roughly the same section of the square, with most segments either fairly vertical (*i.e.*, heavily white tracts), fairly horizontal (*i.e.*, tracts with a large minority populations), or stuffed so far into the top-right corner that voters of both groups heavily favored Shaw. Homogeneous units and those with extreme outcomes make life easier. Having that arrangement of line segments tells me that EI will not have a hard time inferring support rates. I can also tell polarization is likely to be low. Polarization normally would cause the segments to converge either on the top left or the bottom right in a segregated place like Hillsborough.

The red dots represent EI's best guess as to what happened in each tract: what the likely combination of White and Non-White support actually was. Because this estimation was relatively easy, those red dots are able to cluster where the line segments tend to come together. The county estimate basically comes from combining those dots.

The reason I needed to start with a Florida example is that New York City does not lend itself as well to ecological inference. Figure F shows support for Governor Kathy Hochul in New York City in the 2022 general election, with Hispanic citizens along the

FIGURE F – An Ill-Behaved Tomography Plot from New York City



NOTE: The horizontal axis (betaB) represents precinct-level support for Democrat Kathy Hochul in the 2022 gubernatorial election among Hispanic citizens, while the vertical axis (betaW) represents non-Hispanic support for Hochul. The red dots show best guesses for each precinct drawn from naïve ecological inference.

bottom axis (betaB) and other citizens along the left axis (betaW). Both the spread of lines all over the square, and the rightward drift in red dots as they move upward—not to mention the many segments on the bottom left and top right—all tell me that an analyst needs to be much more careful when conducting ecological inferences in this region. Such signs of trouble led me to doubt Dr. Palmer’s simple inferences.

Once Dr. King’s method picks a spot on each of these line segments, with each spot representing a mathematically possible level of combined White and non-White support for Shaw or Hispanic and non-Hispanic support for Hochul, those guesses are added up (weighted by population size) to represent an estimate for how groups voted across the whole area. Because the higher-level estimates build directly from a whole series of lower-level estimates that are mathematically possible, the method’s overall guess for how groups behaved also will be possible, too. Indeed, disciplining each step using those bounds means that the method may perform well, coming close to the truth, even if some of the method’s underlying assumptions are not met. That is, EI can be robust to some level of assumption violations.

Having laid that groundwork, I now can explain why Dr. Palmer’s analysis does not conform to best practices when conducting ecological inference—and therefore why his conclusions are unreliable.

Contextual Effects and Aggregation Bias

The simple or naïve version of Dr. King's method, like the main approach that it replaced (ecological regression), makes a simplifying assumption: it assumes that each group has the same basic underlying political preferences everywhere being analyzed, give or take the presence of one or two quirky neighborhoods and the usual randomness in human behavior. With the RxC version Dr. Palmer used, building from citizen voting-age population (CVAP), EI also assumes that a group's turnout rate will be uniform across the region, aside from randomness. Hispanics and Asians must have the same basic turnout rate. Whites should be equally Republican, Hispanics equally Democratic.

Trying to make ecological inferences if racial/ethnic group behavior varies geographically can blow up the estimation. Such error appears when a group's turnout or partisanship is higher or lower from place to place depending on the size of other groups around them (a "contextual" pattern). If African Americans living in heavily Black communities turn out at a different rate from those in mixed-race locales, then the assumption is violated in a way likely to bias estimates. If Asians living in heavily minority neighborhoods are more Democratic than Asians living in heavily White areas, then estimates likely will be biased. If Hispanics living near fewer Whites are more Democratic than those in White neighborhoods, then inferences can go astray.

Ignoring contextual effects can result in "aggregation bias" that skews conclusions. Changes in a group's behavior from place to place will be attributed, falsely, to other groups—with the joint effect of: (1) making the level of polarization between the groups look either higher or lower than it really is; and (2) distorting conclusions about whether each group's candidate of choice will win when they are mixed together in a district. For that reason, the first thing I did after being provided Dr. Palmer's materials was to check whether he had adjusted his ecological inferences to avoid such aggregation bias. Unfortunately, judging from the code he provided, Dr. Palmer only employed the simple or "naïve" version of ecological inference, assuming that members of each racial/ethnic group participate and vote more or less the same way everywhere.

I have no doubt that the naïve version of ecological inference is inappropriate for New York City. Assuming uniformity for purposes of ecological inference among White voters makes no sense. New York 10th Congressional District ("CD10") and CD11 are adjacent districts with approximately the same share of the population being White—they are within 5 percentage points of each other—yet the former is overwhelmingly Democratic while the latter tilts to the GOP. The inappropriateness of Dr. Palmer's assumption shows up in his own analysis: he reports big differences in the White vote between CD11 and the illustrative version, despite both having the same Staten Island core. White voters on Staten Island (and in the part of Brooklyn in CD11) clearly are more

TABLE 2 – Illustrative CD11 Mostly Decreases the Asian Population Share

DRA DISTRICT ANALYSIS

	VAP	White	Hispanic	Black	Asian	Other
CD10	633,635	49.71	18.43	8.14	23.87	1.87
CD11	612,426	54.05	16.47	8.19	21.67	1.61
Illus CD10	608,667	44.52	18.33	6.37	30.89	1.87
Illus CD11	637,394	58.83	16.63	9.87	15.05	1.63

CVAP DISTRICT ANALYSIS

Location in:		Citizen Voting-Age Population					Citizen Voting-Age Population (%)				
Enacted	Cooper	Whites	Hispanics	Blacks	Asians	Others	Whites	Hispanics	Blacks	Asians	Others
10	10	157,329	52,337	22,043	53,246	2,677	54.70	18.20	7.66	18.51	0.93
10	11	126,367	33,152	12,858	30,255	1,447	61.92	16.24	6.30	14.83	0.71
11	10	84,191	20,678	3,947	48,642	1,059	53.11	13.04	2.49	30.69	0.67
11	11	220,290	57,520	30,736	34,830	1,512	63.87	16.68	8.91	10.10	0.44

NOTE: The proposed remedy for CD11 tacitly recognizes contextual patterns in the vote.

Republican than White voters in Manhattan. Indeed, known variation in White political preferences within New York City are one reason Democratic partisans would prefer that CD11 hop across the water to the Financial District (eroding district compactness) instead of simply following I-278 across the Verrazzano-Narrows Bridge into Brooklyn.² The White voters in Manhattan are notably more Democratic than those in Brooklyn.

What stands out about the change in CD11 imposed by the illustrative map is not that it reduces the number of White voters, but instead that it strips CD11 of Asians. That conclusion holds up regardless of whether I look at VAP in DRA or at citizen voting-age population (CVAP) data, as provided to me by counsel. The population moved into CD11 would be much less Asian than the population taken out. Almost a third of the citizens stripped from CD11 would be Asian. *See* Table 2.

I also suspected that Asians and Hispanics in New York should not be treated as an undifferentiated mass—both because of a well-known partisan sorting that has taken place in where people live, with Democrats and Republicans more likely to live near people who share their politics, and because I have seen such patterns myself analyzing vote choice in other metro areas.³ Minority support for Republicans varies with the size of the White population nearby. Also, I was suspicious of Dr. Palmer’s claim that Hispanics in CD11 have voted almost identically to African Americans since 2020, including in the 2024 presidential election, contrary to well-known national patterns⁴—and contrary to what pre-election surveys were showing specifically for New York.⁵

The statistical package Dr. Palmer employed provides a simple way to: (1) soften assumptions of uniformity within racial/ethnic groups; and instead (2) invite the methodology to take into account contextual patterns. (I have needed to make such adjustments in all my peer-reviewed work using EI, because racial and ethnic groups rarely

vote the same way everywhere in a state or region.). After replicating Dr. Palmer's own analysis, therefore, I tried to verify his estimates while allowing vote choice to covary by the size of the combined Black and Hispanic population. That is, EI RxC was asked to allow for the possibility that people vote differently when they live in heavily minority areas than if they live in places without much of a minority population.

Normally, I do not include computer code in a report like this. But it is important for the reader to understand how easy it was to check whether adding this wrinkle to the analysis made a difference.⁶ Here is a line from Dr. Palmer's code:

```
md.out <- ei.MD.bayes(formula=f, data = dat, sample = ei.samples,
```

Here is my replacement for that line, identical except for the option added at the end:

```
md.out <- ei.MD.bayes(formula=f, data = dat, sample = ei.samples, covariate=f_cov,
```

where *f_cov* is the proportion of the electorate that is Black or Hispanic.

When I repeated Dr. Palmer's analysis with that simple adjustment, the ecological inferences changed, sometimes dramatically. The differences were greatest when it came to Hispanic voters: the share of the Hispanic vote received by Democratic candidates (*i.e.*, the candidates of choice for African Americans) sometimes plummeted by double digits. *See* Table 3. Rather than Hispanic and Black voters converging over the time period, as Dr. Palmer claims, these more nuanced results suggest that the two groups have diverged recently, consistent with national patterns.

I know of no polling data focused solely on CD11 that could verify whether my estimates might be more accurate than Dr. Palmer's. Public-opinion polls sometimes divide results from New York City by borough or by race/ethnicity, but they do not present the cross-tabulations between location and demographic group, presumably because the sample sizes would be irresponsibly small and the margins of error unhelpfully large.⁷ And I have already mentioned that statewide polls, like my results here, contradict Dr. Palmer's conclusion that New York's Hispanic population is just as Democratic as African Americans are. (It would be strange for some of the most-Republican areas of New York City to contain a remarkably Democratic Hispanic population.). But it is not possible to turn to polling data for a second opinion.

One possible resource is VoteHub. That organization conducted ecological inferences for the 2024 Presidential Election, against which we can compare Dr. Palmer's estimates as well as mine. VoteHub's ecological inferences may not be perfect, but their methodology actively sought to capture possible aggregation bias and correct for it—and in a more tailored way than my solution.⁸ VoteHub's results have been available online

TABLE 3 – Dropping the Assumption that People are the Same Everywhere

		PALMER RESULTS											
		Black			White			Hispanic			Asian		
Year	Office	Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)	
2017	City Comptroller	91.10%	88.9	93.1	34.80%	33.6	36.1	87.10%	83.8	89.9	50.90%	39.8	62.8
2017	Mayor	89.10%	86.4	91.3	13.50%	12.2	14.8	79.80%	74.7	84.2	51.00%	40.4	61.1
2017	Public Advocate	88.80%	86.3	91	26.90%	25.4	28.3	83.00%	79.1	86.2	47.50%	36.6	57.9
2018	Attorney General	94.10%	92.7	95.3	35.90%	34.7	37.2	92.60%	90.4	94.2	79.20%	72.2	84.3
2018	Governor	93.50%	91.9	94.7	36.90%	35.5	38.2	92.00%	89.9	93.6	77.50%	70	82.5
2018	State Comptroller	94.70%	93.4	95.9	39.70%	38.5	41	93.60%	91.4	95	80.60%	73.3	85.7
2018	U.S. Senate	94.50%	92.4	96.2	39.70%	37.6	41.5	92.20%	89	94.6	74.80%	64.9	82.9
2019	Public Advocate	90.20%	87.2	92.8	18.70%	16.2	21	86.90%	82.2	90.4	65.10%	49.1	76.8
2020	President	93.10%	90.6	94.9	27.00%	25.7	28.4	90.00%	86.5	93.4	73.50%	65.9	80.9
2021	City Comptroller	86.50%	83	89.5	23.70%	22.4	24.9	77.80%	72.2	82.5	34.00%	25.6	45.5
2021	Mayor	87.30%	83.8	90.2	20.50%	19.3	21.6	82.10%	77.3	86.4	43.50%	33.1	53.9
2021	Public Advocate	88.20%	85.2	90.7	21.00%	19.8	22.2	81.90%	77.9	85.3	40.70%	30.5	53
2022	Attorney General	90.50%	85.7	94.1	22.80%	21	25.1	89.90%	85.3	93.4	60.40%	43.8	73.3
2022	Governor	89.80%	85	93.6	22.00%	20.1	23.9	89.30%	84.7	92.9	53.20%	37.5	69.2
2022	State Comptroller	89.50%	84.5	93.6	25.60%	23.7	27.8	90.40%	85.9	93.8	65.50%	54.2	76.4
2022	U.S. House	90.40%	85.1	94.1	24.10%	22.1	26.4	89.10%	83.9	93	57.50%	44.8	71.5
2022	U.S. Senate	91.00%	87.1	93.9	26.40%	24.7	28	92.90%	89	95.2	64.30%	46.2	78.2
2024	President	88.70%	83.1	93.4	22.20%	20.4	23.9	88.10%	81.1	92.4	49.00%	38.4	59.2
2024	U.S. House	88.70%	83.6	92.9	20.00%	18.1	21.9	87.70%	81.1	92.8	51.60%	41	62
2024	U.S. Senate	89.80%	85	93.4	25.40%	23.8	27	88.40%	82.4	93.1	58.80%	47.1	71.4

		VERIFICATION OF PALMER RESULTS											
		Black			White			Hispanic			Asian		
Year	Office	Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)	
2017	City Comptroller	90.98	88.5	92.9	34.77	33.5	36.0	86.70	82.6	90.0	53.49	39.9	66.4
2017	Mayor	88.37	85.4	90.8	13.60	12.4	14.8	79.55	74.7	83.4	53.11	40.1	64.1
2017	Public Advocate	88.53	85.5	91.1	26.94	25.4	28.4	83.11	78.8	86.5	45.89	34.6	57.8
2018	Attorney General	94.39	93.0	95.6	35.89	34.7	37.4	92.13	90.3	93.6	81.22	74.8	85.8
2018	Governor	93.62	92.0	95.0	36.79	35.5	38.2	91.94	89.9	93.7	77.71	71.2	82.6
2018	State Comptroller	94.66	93.2	95.8	39.65	38.4	40.9	93.29	91.1	94.9	81.50	73.0	86.8
2018	U.S. Senate	94.83	92.8	96.4	39.33	37.4	41.3	92.38	88.5	94.9	76.12	67.9	83.3
2019	Public Advocate	90.28	86.6	93.1	18.24	15.8	20.5	88.49	84.8	91.3	69.64	58.8	78.4
2020	President	92.87	90.7	94.7	26.95	25.7	28.2	89.73	85.7	93.2	73.80	67.4	80.4
2021	City Comptroller	86.71	83.2	89.6	23.45	22.1	24.8	77.85	72.4	82.5	40.16	30.4	50.9
2021	Mayor	86.97	83.2	89.9	20.54	19.3	21.7	81.06	76.3	85.6	42.20	32.7	53.6
2021	Public Advocate	87.41	84.5	90.0	21.27	20.1	22.4	83.49	79.3	86.7	33.00	25.3	45.7
2022	Attorney General	90.46	85.9	94.2	22.66	20.6	24.6	90.59	86.5	93.7	56.63	42.7	69.3
2022	Governor	89.64	84.3	93.7	22.23	20.5	24.0	88.69	83.5	92.5	48.88	39.1	58.3
2022	State Comptroller	90.82	85.4	94.7	26.08	23.9	28.1	89.29	84.1	93.0	58.73	43.8	73.0
2022	U.S. House	90.03	85.0	93.9	24.16	22.0	26.2	88.57	82.7	92.6	59.12	44.1	73.1
2022	U.S. Senate	91.33	87.4	94.3	26.40	24.8	28.1	91.75	87.7	94.8	65.33	45.5	78.7
2024	President	87.50	81.5	92.0	21.94	20.1	23.6	90.94	86.6	94.2	48.26	35.3	60.7
2024	U.S. House	86.63	80.9	91.2	20.17	18.3	21.9	88.32	83.2	92.2	48.00	38.9	57.3
2024	U.S. Senate	90.60	86.6	93.6	25.53	23.9	27.3	87.91	81.7	92.6	57.51	44.2	70.5

NOTE: The bottom table is my extension of his results. I use his data, almost all his code, and his approach to post-estimation calculations—but I add a single option that allowed the ecological inference method to estimate a “covariate” for quantities of interest, permitting them to be higher or lower depending on the size of the combined Black/Hispanic population share. More than half of my estimates are not outside of Dr. Palmer’s confidence intervals.

for a while now, and they are part of a nationwide package of ecological inferences—and so clearly not generated for this litigation. So, I consulted that resource to see if they were coming up with numbers closer to Dr. Palmer’s. If anything, however, VoteHub’s estimate of Hispanic support for Kamala Harris in CD11 was even lower than mine. VoteHub’s estimates, like mine, suggest that Dr. Palmer’s ecological inferences are pretty far off.

TABLE 4 – Dr. Palmer Likely Exaggerates Racially Polarized Voting in CD11

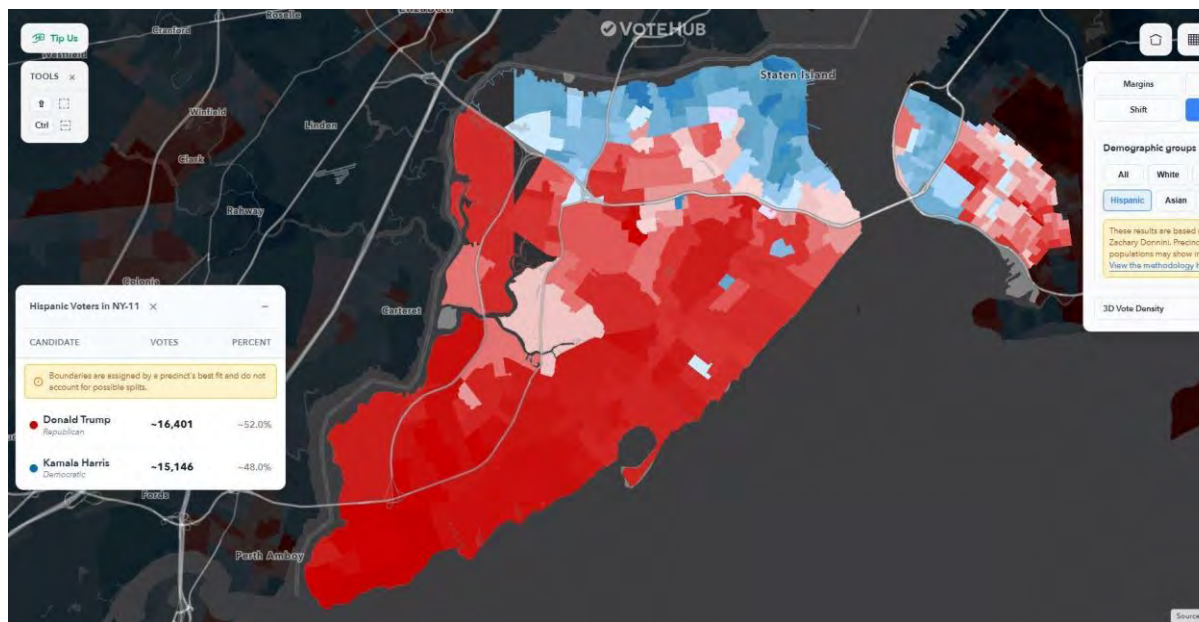
Source	Blacks	Whites	Hispanics	Asians	Others
Palmer Report Table	88.7	22.2	88.1	49.0	65.3
Palmer Replication	87.5	21.9	90.9	48.3	64.1
Voss with Covariates	89.6	20.6	65.1	47.6	52.0
VoteHub	86.4	28.0	48.0	46.3	54.7

NOTE: The top three rows use the same data and, aside from the addition of the covariate option in one instance, use the same code. The VoteHub results, which like the row above it also attempt to remove aggregation bias, use different data and methodology. My analysis shows greater racial polarization than Dr. Palmer's, but only when we are talking RPV between Whites and the small African-American population in CD11. In keeping with national polling and analysis, as well as VoteHub's estimates, I find that Hispanics vote GOP much more than Dr. Palmer reports.

Table 4 displays the results of my new ecological inferences for the four definable racial/ethnic groups. Those results can be compared to Dr. Palmer's from his report (page 10), what I generated running Dr. Palmer's exact code on his exact data, and what VoteHub estimates. Dr. Palmer apparently missed some of the rich contextual variation in how Hispanics vote—specifically, that those who live in whiter neighborhoods are more Republican than those in heavily minority areas, something both my analysis and VoteHub's detected. *See* Figure G. Implication of this error? Dr. Palmer makes the Hispanic vote look more cohesive, makes the Black and Hispanic voters of Staten Island look more politically alike, and makes racial voter polarization in CD11 look wider than appears to be true.

Asians, similarly, tend to be more Republican beneath the interstate loop. *See* Figure H. Dr. Palmer pays little attention to Asian voters. They appear in a pair of tables near the end of his report, as well as in a turnout graph, but they are excluded entirely from his discussion and from most of his graphs/figures. Their erasure is remarkable, given that the main thing separating an analysis of racially polarized voting from an analysis of whether the Black/Hispanic candidate of choice usually will lose is how everyone else votes. Ignoring Asians also is remarkable because the main change Dr. Cooper makes to CD11 is not to decrease the size of the White population or increase the share of the Black/Hispanic voting-age population—in fact, he increases the former and diminishes the latter—but instead to slice the share of Asians. Leaving aside any concern a court might have with the possibility that a redistricting remedy would dilute the vote of Asian citizens, if Dr. Palmer is not estimating Asian voting patterns correctly across the region, then he is also unable to give reliable conclusions about whether redrawing a district in fact would give protected groups success in electing their candidate of choice (the supposed purpose

FIGURE G – VoteHub’s Map of the 2024 Presidential Vote among Hispanics in CD11

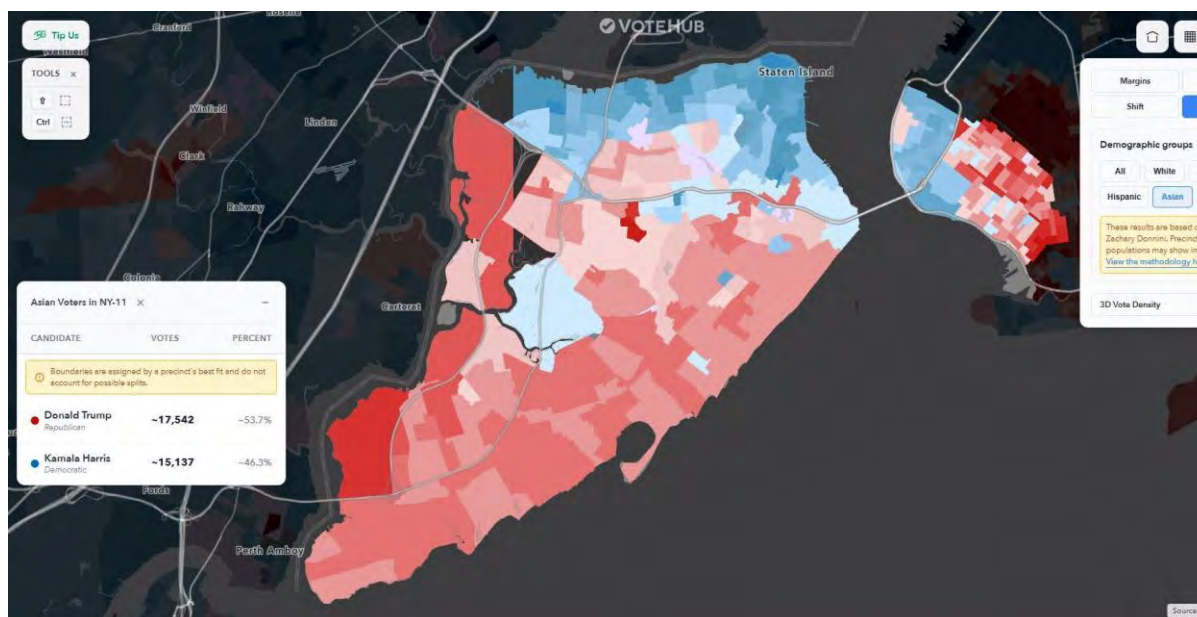


NOTE: VoteHub’s methodology focused specifically on trying to eliminate aggregation bias in their ecological inferences. The result is an estimate of Harris support among CD11 Hispanics that is even farther from Dr. Palmer’s than my contextual model, due to the tendency of Staten Island Hispanics to vote similarly to their White neighbors.

of his table on page 12 of his report).

I need to be clear about something. If one accepted the VoteHub estimates at face value, they would invalidate Dr. Palmer’s report and conclusions almost entirely. VoteHub’s numbers dispute the claim of racially polarized voting between White voters and Hispanic voters, as well as the claim that Hispanic voters are politically cohesive in CD11. I am not advocating such a dramatic conclusion based on a methodology that I have not probed in detail. The sole purpose of referencing those publicly available ecological inferences (aside from the utility of their mapping function) was to back up the plausibility that an analyst who actively tries to target aggregation bias can get big estimation differences from someone who ignores it. My own ecological inferences, although not as tailored as VoteHub’s, do still show some racial polarization in CD11 between the White majority and the quarter of the electorate that is Hispanic or African American, although the gap is not nearly as wide and the level of cohesion not nearly as strong as Dr. Palmer claims. I do not know the extent to which my ecological inferences would converge on what VoteHub has reported if I had time to explore, develop, and optimize the model. What I am advocating is that Dr. Palmer’s ecological inferences be recognized for what they are:

FIGURE H – VoteHub’s Map of the 2024 Presidential Vote among Asians in CD11



NOTE: VoteHub’s methodology focused specifically on trying to eliminate aggregation bias in their ecological inferences. The result is an estimate of Harris support among Asians that, like mine, shows them voting Republican in many areas of CD 11.

a series of basic analyses, produced in bulk, that are in no way tailored to the time period, the political context, or the possibility that racial/ethnic groups differ across a diverse metropolitan area.

The narrow confidence intervals that come with Dr. Palmer’s ecological inferences, meanwhile, pretend to a level of certainty in the estimates that surely cannot be supported given how unstable the simulations are to a single change in the programming code. (One way to catch when simulations are unreliable is to see whether they show instability across similar approaches.⁹). At best, Dr. Palmer’s ecological inferences are reported with false precision, and his report runs the risk of confusing laypeople by claiming a greater degree of confidence than warranted.

Estimating Who Votes

One feature of my covariate-based analysis concerned me, which is that I estimated lower support for Kamala Harris among most of the racial/ethnic groups in the data. The exception, African Americans, constitute a small portion of Staten Island. Having all the percentages drift downward raised a red flag because each group’s Democratic voting rate, when weighted by their size of the electorate, needs to add up to the actual vote totals reported for the Democratic candidate. Having all my numbers drop raised the specter of some kind of error in the data handling, before or after running ecological inferences. Such

results seemed mathematically unlikely.

My exploration to solve this mystery ended up exposing what I believe to be another flaw in Dr. Palmer's report, one that was hidden from me during my initial verifications of his analysis. To generate his ecological inferences after using citizen voting-age population to capture the size of different racial/ethnic groups, Dr. Palmer's RxC analysis needs to do more than only estimate vote choice. He also must estimate turnout by these demographic groups, to determine their share of the electorate. Notably, Dr. Palmer did not report what his analysis was claiming about the relative mobilization of these social groups, and he specifically instructed his code (contrary to his package's default) to hide the turnout part of his analysis (inserting an option to make it True that the turnout column would be deleted when the results were preserved):

```
ei_output(md.out, formula=f, drop_last_col = T)
```

Significant differences in our turnout estimates would explain how voting choices of different groups could rise or fall consistently, instead of moving in different directions to balance out.

So, I took a step back and reran my verification of Dr. Palmer's work, this time asking it to keep voter turnout in the mix. (This adjustment, regrettably, took more than half a day to run on my computer, so I was only able to complete it shortly before needing to submit this report.). What I found is that Dr. Palmer was estimating turnout rates for each group that did not make much sense. *See* Table 5. African American voters, for example, not only show up as having sat out the 2024 presidential contest, compared to their engagement in the congressional elections, they supposedly preferred to vote in the 2022 House race over New York's two top-ticket contests, and voted in the 2021 Public Advocate race more than in the mayoral race. Hispanics who showed up in 2022 and voted for attorney general and state comptroller supposedly sat out the senatorial election, and they supposedly preferred to vote for comptrollers and public advocates—in both 2017 and 2021—than they preferred to vote in the city's mayoral election. Asians, similarly, show up as preferring down-ballot races over top-ticket contests. All these results fly in the face of the well-known tendency of voters to “roll off” when voting, participating at higher rates for top-ticket offices but not necessarily casting votes in less-visible contests.

I am not saying that my estimates using covariates would be free of these sorts of counterintuitive patterns, if I had had time to rerun that analysis as well. Having only made one tweak to the code to allow more nuance—rather than having worked my way to the best estimates—likely my results would have similar anomalies. Still, the point, as before, is that these ecological inferences are much less stable, when run in bulk across

TABLE 5 – Turnout Estimates from the Palmer Verification

Year	Contest	Black	White	Hispanic	Asian
2017	Mayor	26.1	33.2	17.3	5.7
2017	City Comptroller	23.5	31.4	18.0	3.9
2017	Public Advocate	24.6	30.8	19.0	5.1
2018	United States Senator	44.5	41.7	35.8	13.2
2018	Governor	46.0	42.9	33.6	14.5
2018	Attorney General	46.8	42.2	32.9	13.9
2018	State Comptroller	45.1	42.7	32.1	13.5
2019	Public Advocate	18.2	17.3	13.8	4.5
2020	President	55.1	64.2	53.2	34.7
2021	Mayor	22.0	36.2	17.2	4.7
2021	City Comptroller	21.7	34.2	18.7	5.5
2021	Public Advocate	22.7	34.7	17.5	4.8
2022	United States Senator	25.7	47.5	28.4	9.3
2022	Governor	24.5	47.5	32.5	8.0
2022	Congress	26.0	47.0	30.7	9.6
2022	Attorney General	24.9	46.3	31.9	9.6
2022	State Comptroller	23.8	46.6	30.7	8.9
2024	President	40.7	63.3	47.7	20.6
2024	United States Senator	41.8	61.6	47.6	20.9
2024	Congress	41.6	62.2	47.8	16.1

NOTE: One possible explanation for Dr. Palmer’s unrealistic estimates, and his deviation from my estimates using covariates, is that he likely had errors in his estimation of voter turnout by race/ethnicity. While he estimated that White voters, in general, voted more heavily for candidates at the top of the ballot, he generally estimates (wrongly I believe) that minority candidates would increase their participation for lower-ballot races.

years and contests, than Dr. Palmer’s report would lead a layperson to believe.

The Proper Scope of Analysis

The other immediate concern I had with Dr. Palmer’s report was when I discovered that he was only conducting his ecological inferences within a single congressional district, even when the election was taking place on a broader scale. Purely as a technical matter, ecological inferences usually will improve when the analyst takes advantage of more data. Even if, at the end of the analysis, the researcher will only care about the results produced for a smaller subdivision of the data—say, a congressional district—the superior approach is to cast a wider net so that the estimates can “borrow strength” from similar nearby locations.

I should stress: the principle in favor of more data can be taken too far. The broader the scope of an ecological inference, the more likely the analyst will be combining dissimilar places, creating all the difficulties with internal group variation discussed earlier in my response. A single, statewide ecological inference rarely will be the optimal choice,

even if the end goal is to estimate how groups are behaving statewide. Ideally, an analyst identifies meaningful subdivisions within a state—such as regions with a shared history or that share known economic or cultural commonalities—and conducts the ecological inferences within those regions, combining them into statewide results if desired. The need for identifying a socially, culturally, or politically meaningful region can be essential when the area of interest is transient and manipulable, like a legislative or city council district.

My understanding is that Petitioners are relying on the New York Voting Rights Act for their legal arguments, so I consulted that source to see if it would provide guidance as to the proper scope of analysis. But the language I found there positioned vote-dilution claims within entire political subdivisions. If an analysis of local elections would consider the entire locality at once, then the parallel for congressional elections would be the entire state—and that is too much territory to run through the ecological-inference software at once.

Instead, I settled on what I often endorse for ecological inference, which is to conduct the analysis within a broader metro area. New York City, as a construct, is meaningful socially, culturally, and politically. Counsel provided me with data for congressional districts 5-15, the districts that had most of their populations in New York City—data that included both citizen voting-age population (CVAP) and the returns from a handful of recent elections.

In the interests of time, I needed to select a focal contest to see how results changed when conducted on a broader scale. I selected for that purpose the 2022 gubernatorial election, won by Democrat Kathy Hochul, because it was competitive enough to bring out variations in how people were voting. Because the purpose is to contrast my results with Dr. Palmer's, I dropped the covariate option again, despite its advisability. That simplification also allowed me to produce results in a timely fashion. Even after that simplification, the analysis took more than 12 hours to complete.

Results appear in Table 6. In the interest of brevity, I will underscore some key features of that analysis, but note that since then, I have been able to replicate the analysis for other statewide elections and these conclusions are supported in other elections.

First, results from CD11 for racial polarization look more like what I reported from my covariate analysis than like what Dr. Palmer reports. African American support for the Democrat is significantly higher than Hispanic support, the latter being more dominant on Staten Island. Polarization between Whites and Hispanics in CD11 therefore is weaker than the impression Dr. Palmer gives. It is only with the smaller groups—Asians and Others—that these results look more like the analysis performed without covariates. Note the implication: had Dr. Palmer widened the scope of his analysis, having more data could have corrected for unrealistically high Hispanic vote-choice estimates without him needing to run a covariate analysis.

Second, Asian voters in CD11 apparently did not prefer the Democratic choice for governor. She was, in fact, apparently not popular with Asian voters citywide. This conclusion fits with polling from 2022, which showed her job approval with Asians was almost as poor as it was with Whites.¹⁰ My ecological inferences here of course contain some random noise—guesses above 50% do appear within the confidence intervals—but either way, it is clear that CD11 contains a majority of White and Asian voters who prefer Republican representation. As a result, these results suggest that submerging the White and Asian voters into illustrative districts 10 and 11 would dilute their vote enough that they would likely be represented by a pair of Democratic members of Congress instead.

Third, racially polarized voting between White voters and Black/Hispanic voters appears in some, but not all, of New York City's current congressional districts. Specifically, in the case of this contest, we see racially polarized voting in congressional districts 5, 6, 8, and 9 but not in districts 7, 10, 12, 13, 14, and 15. Late in this process, I was asked whether such polarization was appearing in other contests, especially for districts 5, 8, and 9. The answer is yes, it appeared in other contests. Table 7 shows similar polarization in the 2020 presidential election.

Fourth, the racial nature of the illustrative maps, and therefore their partisan implications, can be seen in the breakdown of precincts across four subdivisions: precincts that appear in CD10 and CD11 in both the enacted and the illustrative maps, but also the precincts that Dr. Cooper either shifted to CD11 or shifted to CD10. Dr. Cooper cracks CD11's Republican White voters and Asian voters and spreads them between illustrative CD10 and illustrative CD11 so that they will be submerged. Both the White voters and the Asian voters that Dr. Cooper considers moving out of CD11 are more Republican (only giving Hochul around 32% and 46% of their support) than the voters pulled in, burying those voters in the heavily Democratic CD10. Meanwhile, the voters joined to Staten Island tilt Democratic across the board. The result is that both illustrative maps submerge White voters, who lean Republican, with populations expected to cohere against them.

Looking at those subcategories of CD10 and CD11 brings to light another, more substantive, problem with conducting ecological inferences only within a single district—at least when it comes to trying to decide how to configure districts that will impact a wider area. Those same voters can be made to look polarized, or not polarized, depending on how one draws the lines. A cohesive White and Asian population in Staten Island can be brought into relief, or hidden, depending on the other precincts tossed in to the district. Fairly cohesive Republican communities in Brooklyn can be made to look less cohesive by merging them into CD10.

TABLE 6 – Citywide Ecological Inferences by Race and Congressional District

Location	Subdivision	Blacks			Whites			Hispanics			Asians			Other		
		Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)		Estim.	(C.I.)	
NYC		0.962	0.959	0.965	0.600	0.596	0.605	0.765	0.758	0.772	0.518	0.501	0.535	0.810	0.729	0.880
CD05		0.960	0.956	0.964	0.338	0.319	0.357	0.749	0.736	0.763	0.548	0.526	0.568	0.814	0.735	0.887
CD06		0.945	0.929	0.961	0.423	0.399	0.446	0.744	0.730	0.757	0.468	0.447	0.490	0.761	0.672	0.847
CD07		0.949	0.940	0.959	0.700	0.691	0.709	0.774	0.764	0.785	0.561	0.536	0.587	0.822	0.743	0.896
CD08		0.971	0.967	0.975	0.408	0.399	0.417	0.782	0.772	0.793	0.524	0.492	0.554	0.838	0.770	0.903
CD09		0.962	0.959	0.966	0.379	0.371	0.388	0.776	0.764	0.787	0.519	0.486	0.549	0.815	0.733	0.891
CD10	TOTAL	0.956	0.946	0.965	0.841	0.834	0.847	0.764	0.752	0.776	0.539	0.517	0.561	0.816	0.736	0.892
	Part that stays	0.955	0.944	0.966	0.807	0.798	0.815	0.759	0.744	0.773	0.531	0.506	0.555	0.814	0.731	0.896
	Moves to CD11	0.956	0.939	0.971	0.884	0.874	0.894	0.773	0.756	0.790	0.553	0.516	0.588	0.818	0.723	0.906
	Illustrative	0.955	0.945	0.965	0.636	0.625	0.645	0.759	0.746	0.771	0.495	0.472	0.518	0.814	0.733	0.892
CD11	TOTAL	0.950	0.933	0.966	0.201	0.192	0.210	0.751	0.736	0.766	0.481	0.451	0.511	0.810	0.724	0.897
	Moves to CD10	0.955	0.933	0.974	0.316	0.293	0.339	0.759	0.738	0.780	0.455	0.418	0.493	0.811	0.709	0.907
	Part that stays	0.949	0.930	0.967	0.157	0.148	0.165	0.748	0.731	0.765	0.517	0.476	0.556	0.810	0.712	0.905
	Illustrative	0.951	0.937	0.965	0.422	0.415	0.429	0.757	0.744	0.771	0.533	0.504	0.562	0.814	0.727	0.894
CD12		0.952	0.938	0.965	0.842	0.836	0.847	0.762	0.747	0.777	0.501	0.469	0.532	0.803	0.712	0.889
CD13		0.972	0.967	0.977	0.884	0.870	0.897	0.783	0.775	0.790	0.635	0.608	0.663	0.829	0.754	0.901
CD14		0.952	0.942	0.963	0.544	0.529	0.560	0.743	0.734	0.752	0.490	0.459	0.521	0.810	0.723	0.894
CD15		0.961	0.955	0.967	0.614	0.590	0.637	0.766	0.758	0.773	0.532	0.491	0.573	0.808	0.721	0.892

NOTE: Using data provided by counsel, I ran a single ecological RxC ecological inference for most of New York City. The precinct-level estimates developed in producing citywide numbers can be reaggregated to produce voting estimates for lower-level places as well. The numbers in all of the rows, therefore, come from the same estimation procedure.

TABLE 7 – Racial Polarization in Presidential Voting

2020 Presidential	Cong. District		
	5	8	9
Black Vote	96.77	97.06	97.46
Hispanic Vote	82.20	87.44	85.52
White Vote	45.22	49.45	46.45
Asian Vote	72.48	61.92	63.95
Other Vote	79.68	81.62	80.63

NOTE: Shows the level of racial polarization in the 2020 presidential contest in districts 5, 8, and 9, taken from an analysis parallel to that in Table 6.

(References listed on following page)

REFERENCES

¹ The same was true of his analysis of the illustrative district (not shown). Theoretically, because Dr. Palmer set a seed as part of his code – another rare sign of professionalism in how he conducted his work – my results should not just be like Dr. Palmer’s. They should be identical. We’re guessing that the differences are not a sign of trouble with Dr. Palmer’s table generation, just a computer issue: They’re not identical because the analysis spreads out over multiple cores, and my computer works at a different speed from Dr. Palmer’s, so likely the cores are trying to draw “random” numbers at a different pace than when he did his work. If that hypothesis is correct, then this only adds to the reliability of the verification: It means Dr. Palmer’s results were robust to a different pacing through the random-number generator.

² DRA provides three measures of compactness: the Reock (which captures the extent the district resembles a perfect circle), the Polsby-Popper (which functions like the Reock but punishes the score for zigzags and tendrils that add to the district perimeter), and the KIWYSI score (which summarizes over the various considerations that people take into account when judging whether a district has been gerrymandered. Districts are judged to be tidier if the scores are higher. All three scores worsen, for both CD10 and CD11, in the illustrative plan compared to the enacted versions. For CD11, the scores drop from .45 to .29 (Reock), from .54 to .28 (P-P), and from 100 to 37 (KIWYSI). For CD10, they drop from .56 to .39 (Reock), from .36 to .19 (P-P), and from 66 to 41 (KIWYSI). Some degree of compactness is being sacrificed on behalf of the mapmaker’s goals.

³ Bishop, Bill, 1953-. 2008. *The Big Sort: Why the Clustering of Like-minded America Is Tearing Us Apart*. Houghton Mifflin.

⁴ Fraga, Bernard L., Yamil R. Velez, and Emily A. West. 2024. “Reversion to the Mean, or Their Version of the Dream? Latino Voting in an Age of Populism.” *American Political Science Review*. doi:10.1017/S0003055424000406.

⁵ <https://www.cygn.al/wp-content/uploads/2024/10/22669-Cygnal-National-NVT-Oct24-2-Deck-Public.pdf>.

⁶ Note that I say “check” for the error because if it were necessary to generate authoritative estimates for these voting rates – rather than just seeing whether allowing for a covariate made a big difference – I would not have stopped here. To get optimal estimates for the effect of covariates, I could have run the model in various ways, with different possible “priors” related to the covariate – the sort of thing that Dr. Palmer’s code, by embedding everything within an R function that discards intermediate results, did not accommodate exploring in a timely way.

⁷ I did not put in a ton of effort looking for polling data, because it only would have been for verification purposes, and poll results shouldn’t necessarily be treated as trustworthy anyhow. But for what it’s worth, I did set ChatGPT looking, and ChatGPT had no more luck than I did. I received the following response to my query: “I poked around, and I have not found any publicly-available poll (2017–2025) that gives what you’re asking for: that is, vote-choice or political-orientation data broken out by both borough and race/ethnicity — e.g. ‘Hispanic Staten Island’ vs ‘Black Staten Island.’”

⁸ <https://votehub.com/2025/09/15/2024-precinct-map-demographics-methodology/>.

⁹ Elliott, Corrine F., James PC Duncan, Tiffany M. Tang, Merle Behr, Karl Kumbier, and Bin Yu. 2025. “Designing a Data Science simulation with MERITS: A Primer.” <https://arxiv.org/abs/2403.08971>.

¹⁰ <https://scri.siena.edu/wp-content/uploads/2022/06/NYC0522-Crosstabs-Final.pdf>.

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

-----X
Michal Williams; José Ramírez-Garofalo; Aixa Torres; and
Melissa Carty,

Petitioners,

-against-

Board of Elections of the State of New York; Kristen
Zebrowski Stavisky, in her official capacity as Co-
Executive Director of the Board of Elections of the State of
New York; Raymond J. Riley, III, in his official capacity as
Co-Executive Director of the Board of Elections of the
State of New York; Peter S. Kosinski, in his official
capacity as Co-Chair and Commissioner of the Board of
Elections of the State of New York; Henry T. Berger, in his
official capacity as Co-Chair and Commissioner of the
Board of Elections of the State of New York; Anthony J.
Casale, in his official capacity as Commissioner of the
Board of Elections of the State of New York; Essma
Bagnuola, in her official capacity as Commissioner of the
Board of Elections of the State of New York; Kathy
Hochul, in her official capacity as Governor of New York;
Andrea Stewart-Cousins, in her official capacity as Senate
Majority Leader and President *Pro Tempore* of the New
York State Senate; Carl E. Heastie, in his official capacity
as Speaker of the New York State Assembly; and Letitia
James, in her official capacity as Attorney General of New
York,

Respondents,

-and-

Nicole Malliotakis; Edward L. Lai, Joel Medina, Solomon
B. Reeves, Angela Sisto, and Faith Togba,

Intervenors-Respondents,

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VERIFICATION


Index No. 164002/2025

Hon. Jeffrey H. Pearlman

Motion Seq.

D. Stephen Voss, being duly sworn, deposes and says:

1. I am over 18 years of age and am not a party to this case.
2. I swear under penalty of perjury to the faithfulness of the opinions expressed in the foregoing Response to Petitioners' Expert Report of Maxwell Palmer, and to the best of my knowledge, to the truth and accuracy of the factual statements made therein.
3. If asked to testify on these matters, I could and would testify under oath to their contents, under penalty of perjury.
4. I affirm this 8th day of December 2025, under the penalties of perjury under the laws of New York, which may include a fine or imprisonment, that the foregoing is true, and I understand that this document may be filed in an action or proceeding in a court of law.


Name: D. Stephen Voss