Addendum to Primary Expert Report of Jonathan C. Mattingly, Ph.D.

I am a Professor of Mathematics and Statistical Science at Duke University. My degrees are from the North Carolina School of Science and Math (High School Diploma), Yale University (B.S.), and Princeton University (Ph.D.). I grew up in Charlotte, North Carolina and currently live in Durham, North Carolina.

I lead a group at Duke University which conducts non-partisan research to understand and quantify gerrymandering. This report grows out of aspects of our group's work around the current North Carolina legislative districts which are relevant to the case being filed.
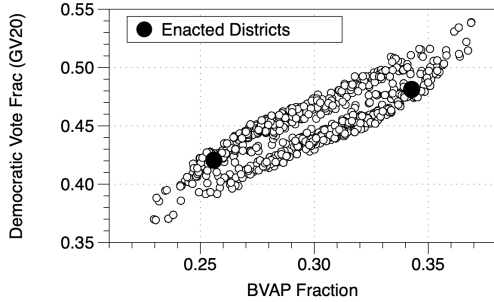
I previously submitted an expert report in Common Cause v. Rucho, No. 18-CV-1026 (M.D.N.C.), Diamond v. Torres, No. 17-CV-5054 (E.D. Pa.), Common Cause v. Lewis (N.C. Sup. Ct No. 18-cvs-014001), and Harper v. Lewis (No. 19-cv-012667) and was an expert witness for the plaintiffs in Common Cause v. Rucho and Common Cause v. Lewis. I am being paid at a rate of $400/per hour for the work on this case. This note is a companion to the main expert report. It has been requested by a subset of plaintiffs' counsel.

Addendum Analysis

We examine the correlation between the fraction of the black voting age population and the partisan make up of (i) the North Eastern cluster choices in the North Carolina State Senate, and (ii) the districts within the Duplin-Wayne county cluster in the North Carolina State House.

North Eastern Cluster Options

County Clusters (1 district per cluster)	Enacted Clusters		Alternative Option	
	MARTIN WARREN HALIFAX HYDE PAMLICO CHOWAN WASHINGTON CARTERET	GATES CURRITUCK PASQUOTANK DARE BERTIE CAMDEN PERQUIMANS HERTFORD TYRRELL NORTHAMPTON	PASQUOTANK DARE PERQUIMANS HYDE PAMLICO CHOWAN WASHINGTON CARTERET	GATES CURRITUCK CAMDEN BERTIE WARREN HALIFAX HERTFORD TYRRELL NORTHAMPTON MARTIN
BVAP(%)	30.0%	29.49%	17.47%	42.33%
Dem Vote % (LG16)	46.07%	47.74%	38.51%	55.42%
Dem Vote %(PR16)	45.60%	46.70%	37.83%	54.59%
Dem Vote %(CA20)	42.28%	44.47%	36.48%	50.75%
Dem Vote %(USS20)	45.31%	45.36%	38.45%	52.75%
Dem Vote %(TR20)	44.12%	44.58%	37.61%	51.59%
Dem Vote %(GV20)	46.79%	47.56%	40.75%	54.12%
Dem Vote %(AD20)	47.79%	47.72%	41.02%	54.99%
Dem Vote %(SST20)	47.56%	47.85%	41.03%	54.89%
Dem Vote %(AG20)	45.88%	46.11%	39.15%	53.40%
Dem Vote %(PR20)	44.09%	45.54%	38.30%	51.84%
Dem Vote %(LG20)	43.80%	45.12%	37.74%	51.69%
Dem Vote %(CL20)	45.23%	46.42%	39.12%	52.00%

The Northeastern corner of the North Carolina State Senate has two possible county clusterings; each clustering is made of two clusters each with one district. We compare the enacted plan with the other possible districting option. We find that the enacted plan splits the Black voters roughly in half, whereas the other potential clustering would have concentrated Black voters in one of the two resulting districts. Furthermore, we find that the enacted plan leads to two stable Republican districts when measured across a range of historic voting patterns. In contrast, the alternative clustering would have allowed the district with the larger BVAP (42.33% BVAP) to reliably elect a Democratic candidate. Thus, the chosen cluster is the choice that favors the Republican party andsignificantly fractures Black voters in the area.

Next, we examine the correlation between BVAP fraction and Democratic vote fraction in the Duplin-Wayne cluster. We elect to use the 2020 Governor votes and plot the relationship between the BVAP and the vote fraction in (i) our ensemble and (ii) the enacted plan. We demonstrate that (i) it is possible to draw districts with significantly higher BVAPs and that (ii) according to the examined historic votes, raising the BVAP would likely raise the Democratic vote fraction.

I declare under penalty of perjury under the laws of the state of North Carolina that the foregoing is true and correct to the best of my Knowledge.

Jonathan C Mattingly
Dec 23, 2021.