

# **EXHIBIT 48**

## **McDonald Rebuttal Report**

I have been asked by Plaintiffs in this action to address the expert reports authored by Dr. Allan Lichtman and Mr. William Cooper. I focus primarily on Dr. Lichtman's report, and have a few comments regarding Mr. Cooper's report.

At the outset of my initial report (McDonald p. 3), I stated that I have been asked by Plaintiffs to this action to address three questions. The three questions Plaintiffs asked me to address are:

- 1) Whether Maryland's 2011 Congressional Plan resulted in vote dilution that was sufficiently serious to produce a demonstrable and concrete adverse effect on a group of voters?
- 2) Whether the Maryland General Assembly or its mapmakers specifically intended to burden the representational rights of certain citizens because of how they voted in the past and the political party with which they had affiliated?
- 3) Whether the lines of the Sixth Congressional District would have been drawn as they were but for the map drawer's and General Assembly's consideration of partisan goals to the detriment of traditional redistricting principles?

For the most part, Dr. Lichtman does not criticize my analyses and conclusions I draw in responding to these three questions. In this reply report, I address Dr. Lichtman's critiques that with respect to these questions, and I show they do not undermine my conclusions.

Instead of responding directly to the three questions I answer, Dr. Lichtman appears to object to the questions themselves, which has an effect of distracting from a real debate regarding the questions I have been asked to evaluate. Plaintiffs have represented to me that their legal theory involves a First Amendment claim as to whether or not Maryland intentionally targeted Republicans residing in the Sixth Congressional District, as it was configured prior to the post-2010 redistricting, due to the political beliefs that they held at the time of the redistricting. I have not been tasked to judge the merits of this legal argument, nor is it my understanding that my role of expert witnesses is to draw legal conclusions in litigation. However, my education and professional experience allow me to draw conclusions that are relevant to these legal questions.

Dr. Lichtman reframes my analysis of the adverse effects the 2011 Maryland congressional redistricting plan on Republicans residing in the Sixth Congressional District to be in terms similar to partisan gerrymandering claims under the Equal Protection and Due Process Clauses. Specifically, he argues that the partisan effects of a redistricting plan as a whole must be analyzed. Doing so, he purports to show "...Maryland Democrats are generally at a statewide *disadvantage* in converting their votes to congressional house seats..." (Lichtman p. 6, original emphasis). On its face, this claim is highly suspect. Democratic 2012 congressional candidates won a combined 62.9% of Maryland's vote, and won seven of eight house seats, or 87.5%. Maryland Democrats thus won 24.6 percentage points more seats than might have been expected if seats had been awarded proportional to the vote; this outcome clearly advantages the Democrats. I show Dr. Lichtman's faulty conclusion is a consequence of his erroneous math and

incomplete analyses. When I apply the proper math to complete analyses, the adopted Maryland congressional redistricting plan is clearly a Democratic gerrymander.

When I correct for errors in Dr. Lichtman's partisan gerrymandering analyses of the congressional redistricting plan as a whole, his analyses of support my conclusion that Maryland Democrats intended to adversely affect Republicans residing in the prior Sixth Congressional District. Dr. Lichtman states that "CD6 [w]as the reasonable alternative" to improving Democrats' performance in the plan as a whole. (Lichtman p. 42). Dr. Lichtman's corrected partisan gerrymandering analyses show that Republicans are disadvantaged in the Maryland congressional plan as a whole. Maryland Democrats thus realized their partisan advantage in the plan as a whole by specifically targeting Republicans in the Sixth Congressional District since this was the only "reasonable alternative" for Democrats to seek such advantage.

I proceed to address Dr. Lichtman's criticisms of my analysis to these three question in turn, with the addition of clarifying points to some of his conclusions.

## **Question One: Did Vote Dilution of Republicans Occur?**

### **Dr. Lichtman and I Agree Vote Dilution Occurred**

Dr. Lichtman and I agree with respect to the first question that Maryland's 2011 Congressional Plan resulted in vote dilution that was sufficiently serious to produce a demonstrable and concrete adverse effect on a group of voters.

Dr. Lichtman states his first opinion in his report (Lichtman p. 2):

I conclude that these reports establish only what is already the obvious: that the 2011 Maryland congressional redistricting plan improved Democratic prospects in Maryland's Congressional District 6 as compared to the prior redistricting plan.

Similarly, my first opinion on p. 3 of my initial report states:

...the evidence is incontrovertible that Maryland's adopted Sixth Congressional District was drawn in a manner that has the effect of diminishing the ability of registered Republican voters to elect candidates of their choice compared to the previous, benchmark district.

The only difference between our opinions is a choice of words. Dr. Lichtman frames his opinion in terms of "improved Democratic prospects," while I frame it in terms of "diminishing the ability of registered Republican voters to elect candidates of their choice." Because these are inverse ways of saying the same thing, Dr. Lichtman and I are in agreement with respect to the obvious effect that Maryland's Sixth Congressional District was drawn in such a way to favor Democrats at the expense of Republicans.

## My Vote Dilution Analysis

In my initial report, I establish that “I am thus highly confident within prevailing professional standards that registered Democrats in the Sixth Congressional District prefer Democratic candidates and registered Republicans prefer Republican candidates” (McDonald p. 9).

Dr. Lichtman criticizes my analysis, thusly (Lichtman p. 32):

Unlike racial groups, there is no reliable way to identify partisan groups. Party registration or identification is a highly imperfect form of identification because party registration does not assure voting for the party in any given election.

In my voting rights experience, it is also true that racial and ethnic groups may not reliably vote for a particular candidate of choice. Indeed, in litigation involving New York’s state Senate districts, I found Hispanics did not reliably cohesively vote with African-Americans to elect the African-American candidate of choice.<sup>1</sup> The exercise of conducting racial bloc voting analyses is to determine the degree of group cohesion in voting. The levels of a group voting “only 69 percent” (Lichtman p. 32) for a candidate are more than sufficient to establish bloc voting. Indeed, Dr. Lichtman agrees with me that fifty percent of the vote serves as a bright line when determining racial bloc voting when he draws conclusions from the fact that “Bartlett lost Washington County with 49.3% of the two-party vote” in the 2012 election (Lichtman p. 32).

Dr. Lichtman attempts to undermine my conclusion from my racial bloc voting analysis essentially rest on the assertion that Republicans can remedy the burdens that changes to the Sixth Congressional District’s boundaries places upon them by “...chang[ing] their party affiliation” (Lichtman p. 32). I have two responses. First, Dr. Lichtman’s partisan gerrymandering analyses (Lichtman pp. 5-11) assume stability of partisan voting. Dr. Lichtman’s argument that Republicans or Democrats can simply change their party affiliations if district lines are drawn to adversely affect them arrives at the nonsensical conclusion that partisan gerrymandering never occurs. Second, Dr. Lichtman’s rebuttal evidence on changing voting behavior of partisans consists primarily of an analysis of the change in the total votes from 2008 to 2012 within one county: Washington County. This selective evidence is woefully inadequate to establish how partisans voted within this one county or within Maryland’s Sixth Congressional District as a whole, as I establish in my report by examining all the available evidence (McDonald pp. 7-9).

Dr. Lichtman’s analysis of Washington County is drawn from Table 13 of his report (Lichtman p. 38), which reports 2012 election results for four Western Counties. He uses this evidence to assert that “...Delaney [the Democrat] was not elected with the votes of Montgomery County only, but, as indicated in Table 13, he also won Washington County and the parts of Frederick County included in CD6” (Lichtman p. 37). As vividly illustrated in my Figure Six (McDonald p. 23), Frederick County is clearly split along partisan lines. To use election results in a county clearly split along partisan lines as evidence of a lack of partisan gerrymandering is odd.

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<sup>1</sup> *Rodriguez v. Pataki* 308 F. Supp. 2d 346 (S.D.N.Y 2004).

Although not clear, I believe Dr. Lichtman is responding to my summary conclusion that (McDonald p.17):

Maryland's adopted Sixth Congressional District's geography and political composition are a clear result of a classic partisan gerrymandering strategy known as cracking. A district that was predominantly rural and Republican in character was transformed into a district where the political strength of Democratic suburbs of the Washington, D.C. suburbs outweighs the Republican rural areas, predominantly in the panhandle.

I am happy to clarify, which is clear from my discussion of the changes to the Sixth Congressional District (McDonald pp. 11-12), that the Sixth Congressional District retained Democratic pockets in Maryland's panhandle that also contributed to the "...major transformation from a predominantly Republican district to a predominantly Democratic district" (McDonald p. 11).

### **Dr. Lichtman's Attempt to Reframe Question One: His Partisan Gerrymandering Analyses**

Dr. Lichtman's asserts the "...possible existence of a partisan gerrymander must be assessed by examining the plan as a whole" (Lichtman p. 3). To be clear, I was not asked by Plaintiffs to this action to evaluate partisan gerrymandering of the entire adopted Maryland congressional redistricting plan. I understand that the Plaintiffs' focus on the Sixth District alone is a function of their legal theory, the merits of which I am not in a position to judge (nor is Dr. Lichtman). My purpose in this section is to establish glaring deficiencies in Dr. Lichtman's computations and methodology that when analyzed properly reverse his opinion that "Maryland's 2011 Congressional Plan is Not a Partisan Gerrymander" (Lichtman p. 5).

Dr. Lichtman makes two mistakes in his partisan gerrymandering analyses. He misapplies a methodology I used in *Perez v. Perry*, a case regarding Texas congressional and legislative districts, and he miscalculates a newly proposed method to measure the degree of partisan gerrymandering known as the efficiency gap which he states is "relatively simple to compute" (Lichtman p. 9).

Correctly applying Dr. Lichtman's two tests for partisan gerrymandering of the entire plan, I conclude the entire adopted Maryland congressional plan is a Democratic gerrymander that disfavors Republicans.

#### Partisan Gerrymandering Analysis: *Perez v. Perry*

With respect to my methodology in *Perez v. Perry*, Dr. Lichtman correctly notes on page 5 of my report that my proposed methodology involves the following steps:

- 1) Calculate statewide election returns within districts. This requires the reaggregation of statewide results into each of the individual districts of a plan.
- 2) Calculate the average share of "two-party" vote across districts.

- 3) Compare the relationship between seats to votes at various average votes for the two major parties across the districts.

Dr. Lichtman omits that I evaluate the performance of the Texas redistricting plans at a specific average vote: the vote share the parties can expect to receive in a *typical election*.

It is important to consider how votes are translated into seats in a typical election if perfectly competitive elections of equal 50% vote shares for each of the two major parties rarely occur, if ever. Partisan bias measures constructed around 50% of the vote – which is Dr. Lichtman’s approach – may fail to capture another important element in partisan gerrymandering: what is known as responsiveness, or the rate of change in votes a party receives compared to the rate of change in seats a party wins. When the opposition party rarely expects to win fifty percent of the vote, the gerrymandering party can engineer a large amount of responsiveness to garner an even a larger seat advantage over what they may enjoy by merely engineering partisan bias at 50% of the vote. Indeed, the gerrymandering party may trade off partisan bias favoring them at 50% for a high degree of responsiveness that is more than compensated at the expected vote share of a typical election.

To illustrate how the tradeoff between partisan bias and responsiveness works, consider a redistricting plan that has a partisan bias of 5% disfavoring the gerrymandering party at the hypothetical 50%/50% election. This plan also has a high degree of responsiveness, such that each percentage point change in the vote share yields two percent more seats for the gerrymandering party. If the typical election occurs with a 60%/40% vote share split favoring the gerrymandering party, the party can expect to win:

- -5% (for the partisan bias against them at 50%).
- +20% (for the 2% of seats expected in each 1% change in the vote).
- A total of  $-5\% + 20\% = +15\%$  seat share in the typical election.

Maryland Democrats appear to have implemented a partisan gerrymandering strategy that relies primarily on a high degree of responsiveness, thereby favoring them in the typical election. I have previously encountered this strategy of using responsiveness to gerrymander in a state legislative plan proposed by Alaskan Republicans.<sup>2</sup> Thus, it is important to examine “various average votes” (Lichtman p. 5) including the typical election that takes place within a state or locality, and not just those at 50%/50%.

Dr. Lichtman’s incomplete analysis involves two hypothetical atypical Maryland elections. In one hypothetical election he states: “If Republicans were to achieve a bare majority of 51 percent of the vote, according to Dr. McDonald’s methodology they would win 63 percent of the seats” (Lichtman p. 6). In another the other hypothetical election he states “At 54 percent of the vote, under Maryland’s 2011 congressional redistricting plan, Republicans win all six of the districts that are not majority-African American voting rights districts (CD4 and CD7)” (Lichtman p. 6).

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<sup>2</sup> *In Re 2001 Redistricting Cases* (Case No. S-10504).

Dr. Lichtman then compares his statistics to those that I generated in Texas for *Perez v. Perry* in Table 2 of his report (Lichtman p. 8) for an atypical hypothetical 50%/50% Texas election. Texas Republicans engineered both favorable partisan bias and a high degree of responsiveness, so this is a false comparison.

Dr. Lichtman performs no analysis of the typical Maryland election that would fully inform his opinion if he had fully followed my methodology. Somehow Dr. Lichtman obtained statistics regarding atypical Texas elections from my report, while ignoring my analysis of typical elections.

Fortunately, Dr. Lichtman provides nearly all the information necessary to conduct a complete analysis of my *Perez v. Perry* methodology with respect to Maryland. In Table 1 on p. 7 of his report, he provides election results for seven statewide elections reported in the adopted congressional districts. The typical election in Maryland is provided by the average in the rightmost column of Table 1. The typical vote share Maryland Republicans can expect is 39.1%, not 51% or 54%. Indeed, the typical vote shares presented in Table 1 may be actually lower since these statistics exclude “absentee and provisional votes (fewer than 10 percent of votes cast)” (Lichtman p. 6, footnote 11); these votes tend to break in a Democratic direction in Maryland.<sup>3</sup> In a typical Maryland election, Dr. Lichtman’s data show Republicans receive a majority of the vote in only the First Congressional District. Therefore Republicans can expect to win one of eight congressional districts, or 12.5% of the seats, in a typical Maryland election. Since this is less than 39.1% by 26.6 percentage points, I conclude that Maryland’s 2011 congressional redistricting plan is a partisan gerrymander.

Contrary to Dr. Lichtman’s assertion that “Democrats are generally at a statewide disadvantage in converting their votes to congressional house seats” (Lichtman p. 6), I conclude that by applying my entire *Perez v. Perry* methodology it is Republicans who are disadvantaged in typical Maryland elections, not through the partisan bias that Dr. Lichtman investigates only, but through a high degree of responsiveness.

#### Partisan Gerrymandering: Efficiency Gap

With respect to Dr. Lichtman’s efficiency gap analysis, he clearly makes calculation errors that result in his erroneous conclusion that the adopted Maryland congressional plan “translates into an efficiency gap of 8.0 percent disfavoring Democrats” (p. 10, original emphasis).

Dr. Lichtman did not provide the underlying computations for his work, so I will address each step leading to the final computation of the efficiency gap for Maryland’s 2012 House elections. To also be clear, I do not endorse the efficiency gap, as I believe there are several flaws to it. Still, the correct efficiency gap computation reveals the adopted congressional plan favors the Democrats, not the Republicans.

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<sup>3</sup> For example, in the 2012 presidential election, Mitt Romney received 971,869 of the statewide vote out of 2,649,713 of the combined Democratic and Republican “two-party” vote. This yields a statewide Republican two-party vote share of 36.7%, but Dr. Lichtman reports Romney received a higher 37.0% of the vote in the first column of Table 1 in his report (p. 7). This discrepancy is consistent with the excluded absentee and provision ballots breaking in a Democratic direction.

<b>Name</b>	<b>Party</b>	<b>Total Vote</b>	<b>Percentage</b>
<b><u>CD 1</u></b>			
Wendy Rosen	Democratic	92,812	27.5%
Andy Harris	Republican	214,204	63.4%
Muir Wayne Boda	Libertarian	12,857	3.8%
John LaFerla (Write-In)	Democratic	14,858	4.4%
Michael Calpino (Write-In)	Unaffiliated	71	0.0%
Douglas Dryden Rae (Write-In)	Unaffiliated	26	0.0%
Other Write-Ins	N/A	2,932	0.9%
<i>Total</i>		337,760	
<b><u>CD 2</u></b>			
C. A. Dutch Ruppertsberger	Democratic	194,088	65.6%
Nancy C. Jacobs	Republican	92,071	31.1%
Leo Wayne Dymowski	Libertarian	9,344	3.2%
Ray Bly (Write-In)	Republican	22	0.0%
Other Write-Ins	N/A	415	0.1%
<i>Total</i>		295,940	
<b><u>CD 3</u></b>			
John Sarbanes	Democratic	213,747	66.8%
Eric Delano Knowles	Republican	94,549	29.6%
Paul W. Drgos, Jr.	Libertarian	11,028	3.4%
Other Write-Ins	N/A	535	0.2%
<i>Total</i>		319,859	
<b><u>CD 4</u></b>			
Donna F. Edwards	Democratic	240,385	77.2%
Faith M. Loudon	Republican	64,560	20.7%
Scott Soffen	Libertarian	6,204	2.0%
Other Write-Ins	N/A	363	0.1%
<i>Total</i>		311,512	
<b><u>CD 5</u></b>			
Steny H. Hoyer	Democratic	238,618	69.4%
Tony O'Donnell	Republican	95,271	27.7%
Arvin Vohra	Libertarian	4,503	1.3%
Bob Auerbach	Green	5,040	1.5%
Other Write-Ins	N/A	388	0.1%
<i>Total</i>		343,820	
<b><u>CD 6</u></b>			
John Delaney	Democratic	181,921	58.8%
Roscoe G. Bartlett	Republican	117,313	37.9%
Nickolaus Mueller	Libertarian	9,916	3.2%
Other Write-Ins	N/A	399	0.1%
<i>Total</i>		309,549	

<b>Name</b>	<b>Party</b>	<b>Total Vote</b>	<b>Percentage</b>
<u>CD 7</u>			
Elijah Cummings	Democratic	247,770	76.5%
Frank C. Mirabile	Republican	67,405	20.8%
Ronald M. Owens-Bey	Libertarian	8,211	2.5%
Ty Glen Busch (Write-In)	Democratic	10	0.0%
Charles U. Smith (Write-In)	Democratic	28	0.0%
Other Write-Ins	N/A	394	0.1%
<i>Total</i>		323,818	
<u>CD 8</u>			
Chris Van Hollen	Democratic	217,531	63.4%
Ken Timmerman	Republican	113,033	32.9%
Mark Grannis	Libertarian	7,235	2.1%
George Gluck	Green	5,064	1.5%
Other Write-Ins	N/A	393	0.1%
<i>Total</i>		343,256	
<u>All</u>			
	Democratic	1,626,872	62.9%
	Republican	858,406	33.2%
	All	2,585,514	

**Table 1. 2012 Maryland Congressional Results**

I start with the 2012 election results from the Maryland State Board of Elections, reported in Table 1, that Dr. Lichtman identifies as his data source.<sup>4</sup>

Dr. Lichtman describes his steps to compute the efficiency gap as follows (Lichtman p. 9):

- 1) Sum for each party the number of votes cast for losing candidates in each district.
- 2) Sum for each party the number of votes cast for winning candidates in excess of 50%.
- 3) Add together these two sums to obtain the total number of wasted votes for each party.
- 4) Subtract the total number of wasted votes for the party controlling the redistricting from the total number of wasted votes for the second party.
- 5) A positive result indicates that the plan disadvantages the second party, e.g., that it has more wasted votes. A negative result indicates that the plan disadvantages the redistricting party, i.e., that it has more wasted votes.
- 6) Divide the result by the total number of votes cast to obtain the net percentage of wasted votes for the disadvantaged party.

<sup>4</sup> [http://www.elections.state.md.us/elections/2012/results/general/gen\\_results\\_2012\\_4\\_008X.html](http://www.elections.state.md.us/elections/2012/results/general/gen_results_2012_4_008X.html).

7) This final percentage measure represents the efficiency gap.

I am confronted by two undocumented choices which Dr. Lichtman uses to choose candidates to include in his analysis.

First, in some districts partisan write-in candidates ran in the election, who received a combined total of 14,918 votes. Dr. Lichtman does not describe how he treated these candidates. Strictly following Dr. Lichtman's described procedure, I include these candidates in the vote totals for a party within each district and allocate them accordingly if the party won or lost the district. I also report statistics excluding these candidates.

Second, Dr. Lichtman does not describe how he treats Libertarian, Green and non-party affiliated write-in candidates. I follow Stephanopoulos and McGhee who exclude these candidates to compute what is commonly known as the "two-party" vote between Democratic and Republican candidates.

Following these rules, I compute a total of 2,500,196 votes for Democratic and Republican candidates. This is 17,509 more than the 2,482,687 total candidate votes Dr. Lichtman reports in Table of his report (Lichtman p. 11). This difference is close to the partisan write-in candidates combined total of 14,918 votes, but not exact.

Before I compute the efficiency gap computations, it is instructive to note that Maryland Republicans candidates received a combined 33.2% of all Democratic and Republican votes in the 2012 Maryland congressional elections, but won only one seat, or 12.5% of the seats (see candidate totals in Table 1). Dr. Lichtman's opinion that Democrats are disadvantaged by these election results should strike even a casual observer as implausible.

I calculate the efficiency gap in Table 2, presenting all intermediary steps.

In the first column of Table 2 I compute the minimum votes needed to win. For example, in the First Congressional District, there were 321,874 votes for all candidates, after excluding minor party and unaffiliated write-in candidates. The minimum votes needed to win is  $(321,874 / 2) + 1 = 160,938$ . (One vote is added since otherwise there would be a tie.)

In column two is the total votes of all Democratic candidates if a Democrat won the district. In column three is the difference between column three and column two. This represents the wasted votes for the Democrats in excess of what they needed to barely win the district (Dr. Lichtman's Step 2). In the Second District this value is  $194,088 - 143,091 = 50,997$ . In column four the votes for all Democratic candidates if a Republican won the district (Dr. Lichtman's Step 1). These computations are repeated for the Republicans in columns five, six, and seven, respectively.

The grayed areas represent the sum of the wasted votes for each party (Dr. Lichtman's Step 3). For Democrats, this is the sum of the votes reported in columns three and four, and for Republicans the sum in columns six and seven. I compute the total wasted votes for the Democrats – the party controlling the redistricting – is 552,602 and the total wasted votes for the Republicans – the second party – is 697,490.

	<b>Min. Votes Needed to Win</b>	<b>Dem. Votes (If Win)</b>	<b>Excess Votes of Needed to Win</b>	<b>Dem. Votes (If Loss)</b>	<b>Rep. Votes (If Win)</b>	<b>Excess Votes of Needed to Win</b>	<b>Rep. Votes (If Loss)</b>
<b>CD 1</b>	160,938			107,670	214,204	53,266	
<b>CD 2</b>	143,091	194,088	50,997				92,093
<b>CD 3</b>	154,149	213,747	59,598				94,549
<b>CD 4</b>	152,473	240,385	87,912				64,560
<b>CD 5</b>	166,946	238,618	71,673				95,271
<b>CD 6</b>	149,618	181,921	32,304				117,313
<b>CD 7</b>	157,607	247,808	90,201				67,405
<b>CD 8</b>	165,283	217,531	52,248				113,033
<b>Total Wasted Votes Differential</b>				<b>Dem.</b> 552,602			<b>Rep.</b> 697,490
<b>Wasted Votes</b>							144,888
<b>Efficiency Gap</b>							5.8%

**Table 2. Efficiency Gap Computations**

Subtracting the wasted votes from the party that controls the redistricting from the second party yields  $697,490 - 552,602 = 144,888$  (Dr. Lichtman’s Step 4). Since this is a positive number, the Republicans – as the second party – have more wasted votes than the Democrats (Dr. Lichtman’s Step 5). Dividing this by the total number of votes of 2,500,196, I calculate the efficiency gap as 5.8%. (Note, if I exclude the partisan write-in candidates, the efficacy gap is a larger 6.7% disfavoring the Republicans.)

Dr. Lichtman computes the total wasted votes for the Democrats is 985,261 and for the Republicans is 763,002, for a total difference of 222,259 disfavoring the Democrats (Lichtman Table 3, p. 11). The discrepancy with my calculations apparently arises in Dr. Lichtman’s computation of the wasted votes for the winning candidate (Dr. Lichtman’s Step 2). If instead of subtracting the winning candidate’s vote total from the minimum needed to win the district, as the efficiency gap formula requires, I subtract the winning party candidate(s) from the second place party candidate(s), I arrive at 997,544 wasted votes for the Democrats and 750,758 wasted votes for the Republicans. If I exclude the major party write-in candidates, I compute 982,670 wasted Democratic votes and 765,594 wasted Republican votes.

Although I cannot precisely reproduce Dr. Lichtman’s numbers because he did not provide the full information to do so, I am confident through my forensics work that Dr. Lichtman made a fatal error in a computation of the efficiency gap that he describes as “relatively simple to compute” (Lichtman p. 9). Most likely this error lies in the improper computation of the wasted votes for the party that won a district. Where he computes “...an efficiency gap of 8.0 percent

*disfavoring Democrats*” (Lichtman p. 10, original emphasis), I compute either a 5.8% or 6.7% efficiency gap disfavoring the Republicans.

#### Summary of Dr. Lichtman’s Partisan Gerrymandering Analyses

Dr. Lichtman employs two methods to assess if the Maryland congressional redistricting plan is a partisan gerrymander. Neither method supports Dr. Lichtman’s conclusion that “...Maryland’s 2011 congressional redistricting plan was not a partisan gerrymander” (Lichtman p. 52). Indeed, correct computation and interpretation of both methods reveal that the Maryland 2011 congressional redistricting plan is a Democratic gerrymander (though, again, this was not a question I was initially asked to answer).

- 1) With respect to the method I used in *Perez v. Perry*, Dr. Lichtman fails to evaluate the effect of the redistricting plan for the typical Maryland election, instead focusing on atypical elections where Republican congressional candidates receive 50% or 54% of the vote. Dr. Lichtman provides no evidence that Republicans could typically expect such favorable results. When evaluated at the typical election, 39.1% Republican vote, Republican candidates win only one of eight districts, or 12.5% of the seats. Since 12.5% is 26.6 points less than 39.1%, I conclude, as a recognized expert in the evaluation of partisan gerrymandering claims, that the 2011 Maryland congressional plan is a Democratic gerrymander.
- 2) With respect to Dr. Lichtman’s efficiency gap analysis, my forensics analysis indicates that Dr. Lichtman made an incorrect calculation for the wasted votes of the winning candidate by subtracting the second place candidate from the winning candidate. This error led him to compute an efficiency gap of 8.0 percentage points disfavoring the Democrats. When I make the correct calculation by subtracting the minimum necessary to win the election from the winning candidate’s vote share, I arrive at an efficiency gap of 5.8 points disfavoring the Republicans (or 6.7 if I exclude partisan write-in candidates).

### **Question Two: Did Maryland Specifically Intended to Burden Republicans’ Rights?**

The second question Plaintiff’s to this action asked me to address is whether the Maryland General Assembly or its mapmakers specifically intended to burden the representational rights of certain citizens because of how they voted in the past and the political party with which they had affiliated? Through an analysis of the changes to the Sixth Congressional District and its only neighbor, the Eight Congressional District (McDonald pp. 11-16), I conclude “...that politics, not good government goals, was a major motivating factor behind the creation of the adopted Sixth Congressional District” (McDonald p. 17).

### **Dr. Lichtman States Maryland Democrats Did Gerrymander**

Dr. Lichtman contradicts his faulty analysis that Maryland Democrats created a Republican gerrymander elsewhere in his report.

As noted at the outset of my rebuttal, Dr. Lichtman's first opinion in his report is that "...I conclude that these reports establish only what is already the obvious: that the 2011 Maryland congressional redistricting plan improved Democratic prospects in Maryland's Congressional District 6 as compared to the prior redistricting plan" (Lichtman p. 2).

Dr. Lichtman reaffirms this opinion that a goal of Maryland's Democrats was to execute a gerrymander of equal efficacy as similarly situated party-controlled states (Lichtman p. 44):

After the 2011 redistricting Maryland was in line with other party-dominated states. As indicated in Table 18, Maryland's percentage of the two-party presidential vote was about comparable to other states; so too was its percentage of seats held by the dominant party as compared to other states.

Dr. Lichtman then excuses Maryland Democrats for partisan gerrymandering because the Republicans did it elsewhere (Lichtman p. 48):

To offset the large Republican advantage in more heavily populated, and in many cases, competitive states, with significant consequences for representation in Congress, it was reasonable for the Maryland legislature to make CD6 into a more competitive district for Democrats.

Dr. Lichtman thus admits that, despite his faulty partisan gerrymandering analyses, Maryland Democrats intended to burden the rights of Republicans residing in the Sixth Congressional District, since according to Dr. Lichtman, Democrats views "CD6 as the reasonable alternative" (Lichtman p. 42) to improving their performance in the plan as a whole.

### **District Competitiveness**

There is a logical inconsistency in Dr. Lichtman's two prior quotes. In the first quote, Dr. Lichtman implies that it was the goal of Maryland Democrats to elect an additional Democrat to the House of Representatives to bring the partisan composition of Maryland's congressional delegation in line with other similar party-dominated states. In the second quote, he opines that the goal was merely to make "a more competitive district for Democrats" (Lichtman p.48).

As Dr. Lichtman notes, I have written extensively on district competition. I further served as a consultant to the Arizona Independent Redistricting Commission to analyze compliance of the commission with the Arizona constitutional mandate for competitive districts. I have never heard a competitive district described as being *for* a political party. Competitive districts are those where either major party has an equal chance of electing their candidate.

Dr. Lichtman's apparent confusion regarding whether or not the Sixth Congressional District was designed to elect a Democrat or "emerges as competitive" (Lichtman p. 36) lies in faulty analysis.

To begin, Dr. Lichtman alleges that I endorse a "'competitive' range of 45 to 55 percent" to define a competitive district (Lichtman p.36). Since Dr. Lichtman does not provide a quote to this citation, I will do so:

...a normalized presidential vote within two competitiveness ranges, 45-55 and 48-52 percent, are presented in figure 10-1...[t]he wider 45-55 range is presented since it is commonly used to describe competitive congressional elections; however, my analysis of the relationship between competitive districts and competitive elections suggests that the tighter range is a more valid definition of a competitive district (emphasis added).<sup>5</sup>

In the footnote to this paragraph, I note that my methodology is based on my work for the 2001 Arizona Independent Redistricting Commission, and I have written extensively about this methodology elsewhere.<sup>6</sup> It is clear from my quote that I am presenting a 45-55 range as a matter of convenience for an audience familiar with this range, when in truth I endorse a tighter 48-52 range to identify when a district is competitive informed by my practical work as a redistricting consultant and my academic scholarship.

A short digression on terminology is needed, as it is can be confusing. *Competitive district* refers to the underlying partisanship of the district, as is typically evaluated as the level of partisanship through statewide election results aggregated within a district, similar to his Table 1 (Lichtman p. 7) and my Table Three (McDonald p. 10). *Competitive election* refers to the realized election for a district. A statistical analysis is needed to determine the level of partisanship needed for a district to be competitive, such that it will produce a competitive election. These two concepts may not necessarily be the same since statewide offices can have different voting patterns than district elections.

Dr. Lichtman has not performed a statistical analysis to determine the underlying level of partisanship needed within District Six to reliably produce competitive elections, as I employed in my Arizona work or recommend in my academic writing. If I apply the tighter 48-52 range that I generally believe is more valid, absent such a statistical analysis, to the 47.1% average Republican vote share for District Six that Dr. Lichtman presents in Table 1, I conclude that District Six is not competitive. Thus, Dr. Lichtman's following assertion is incorrect (Lichtman p. 36):

The average Republican vote across all statewide elections held in this district from 2012 to 2016 is 47 percent (Table 1), which places it within Dr. McDonald's "competitive" range of 45 to 55 percent.

Dr. Lichtman also cites the 2012 Cook Political Report, which rates the Sixth District as +2 Democratic, which would place it on the cusp of what I consider to be a competitive district. Following the 2016 election, the Cook Political Report rates the Sixth Congressional District as

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<sup>5</sup> Michael P. McDonald. 2006. "Redistricting and Competitive Districts" in *The Marketplace of Democracy: Electoral Competition and American Politics*, Michael P. McDonald and John Samples, eds. Washington, DC: Brookings Press, p. 224.

<sup>6</sup> Michael P. McDonald. 2006. "Drawing the Line on District Competition." *PS: Political Science and Politics* 39(1): 91-94.

+4 Democratic.<sup>7</sup> The most recent Cook Political Report rating does not support Dr. Lichtman's conclusion that the Sixth Congressional District is competitive.

Dr. Lichtman further engages in a "normalization" of vote shares. This is a technique academics use to consider what would happen in a hypothetical 50%/50% election. This computation is used by academics to make presidential elections – which tend to be highly competitive nationally – comparable when they are comparing statistics computed from different presidential elections. However, this computation suffers the same issues that I noted previously with respect to the *Perez v. Perry* partisan gerrymander methodology in that it does not consider what happens in a typical election. In subsequent state-specific publications to my 2006 book chapter cited by Dr. Lichtman, I do not normalize vote shares to compute the competitiveness of districts.<sup>8</sup> Still, even using normalized vote shares, Dr. Lichtman computes a 2012 normalized presidential vote of 52.7% and a 2016 normalized presidential vote of 54.5% (Lichtman p. 36), neither of which fall within the 48-52 range.

Dr. Lichtman's opinion that the Sixth Congressional District is competitive thus rests on three elections: the 2014 Governor election, the 2014 Attorney General election, and the 2014 U.S. House election. However, Dr. Lichtman ignores all the data available to him. In seven of ten elections within the district, the Democratic candidate won decisively. The average seven statewide election results within a district – which is the preferred measure of the partisan character of a district – Dr. Lichtman computes that the Republican candidate received 47.1% of the vote within the Sixth Congressional District. This is outside the 48-52 range I deem most appropriate to identify a competitive district.

It is therefore my opinion, applying methodology consistent with my prior work, that the Sixth Congressional District is not a competitive district. My opinion is most consistent with Dr. Lichtman's assertion that Maryland's Democrats intended to bring the partisan balance of Maryland's congressional delegation "...in line with other party-dominated states" (Lichtman p. 44).

### **Reducing Democratic Wasted Votes**

Dr. Lichtman proposes that another alternative explanation for the reconfiguring of the Sixth Congressional District was to "unpack[] CD8" (Lichtman p. 42). This is just another way of stating that Maryland Democrats wished to adversely affect Republicans in the Sixth District.

Dr. Lichtman states notes that "CD8 under the 2001 redistricting plan was an overwhelmingly packed district" (Lichtman p. 42) and that "...CD6 [w]as the reasonable alternative for unpacking CD8 and the 2011 redistricting plan did precisely that" (Lichtman p. 42).

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<sup>7</sup> <http://cookpolitical.com/file/2013-04-49.pdf>.

<sup>8</sup> Micah Altman and Michael P. McDonald. 2013. "A Half-Century of Virginia Redistricting Battles: Shifting from Rural Malapportionment to Voting Rights and Participation." *University of Richmond Law Review* 47: 771-831; Micah Altman and Michael P. McDonald. 2015. "Paradoxes of Political Reform: Congressional Redistricting in Florida" in *Jigsaw Puzzle Politics in the Sunshine State*, Seth C. McKee, ed. Gainesville, FL: University of Florida Press; Micah Altman and Michael P. McDonald. Forthcoming. "Redistricting by Formula: The Case of Ohio." *American Politics Research*.

If there are trades to be made between two districts, one Democratic in character and one Republican, then the only way to reduce Democratic wasted votes is for Democrats to win both districts. Merely trading Democrats from one district to another without changing the election outcome in the target district is insufficient, since the overall same number of Democratic votes are wasted if the election outcome does not change.

To illustrate, suppose there are 80,000 wasted Democratic voters over what was needed to win the district in the Eight Congressional District and Democrats are 60,000 voters in the Sixth District, which these voters cannot elect their preferred candidate. This yields a total of 140,000 wasted votes. If 20,000 Democratic voters are shifted from the Eighth District to the Sixth District, then there are now 60,000 wasted Democratic voters in the Eighth District and, assuming Democrats continue to be unable to elect their preferred candidate, there are 80,000 wasted votes in the Sixth District, yielding the same 140,000 wasted votes. It is only in the case that the Democrats' preferred candidate wins the Sixth District that their wasted votes decreases. (As a corollary, the Republican wasted votes would increase significantly in the case that their preferred candidate wins neither district, where before their candidate won one.)

It is not surprising that Dr. Lichtman does not understand this dynamic since his failure to compute correctly the efficiency gap appears to have a similar logical error, as noted above.

### **Question Three: Does the Sixth Congressional District Respect Traditional Redistricting Principles?**

#### **Dr. Lichtman Falsely Claims I Examined the Sixth District in Isolation**

Dr. Lichtman criticizes me for examining “only one of eight congressional districts” (Lichtman p. 3) while failing to examine the congressional redistricting plan as a whole. To reinforce this critique Dr. Lichtman references a statement by myself, adding his emphasis to it, that “...you really can't look at one district in isolation...” (Lichtman p. 3).

I did not examine the Sixth Congressional District in isolation. Maryland's Sixth Congressional District has an unusual feature in that it is entirely bordered by the Eight Congressional District. As a consequence, it is possible to examine the Sixth and Eighth Congressional Districts together, but otherwise in isolation from the remainder of the redistricting plan. Dr. Lichtman is thus incorrect in stating “The creation of the alternative district would also change the adopted plan beyond CD6 and CD8, since moving counties and precincts out of adopted CD6 would ripple across the state in the adopted plan” (Lichtman p. 40). Indeed, I propose and analyze an alternative congressional redistricting plan that makes changes to only the Sixth and Eighth congressional districts (McDonald pp. 14-16).

These subsequent concerns about my alternative plan that Dr. Lichtman lists therefore do not apply to my analysis (Lichtman p. 40):

Dr. McDonald gave no assurance that the proposed district would respect the legitimate redistricting goals of other areas of the state, such as respecting the non-retrogression mandate of § 2 of the Voting Rights Act in Districts 4 and 7;

disallowing a crossing of the Chesapeake Bay; ensuring that District 2 continued to contain all major military installations in Maryland; ensuring all incumbents continued to reside in their district; and ensuring precise mathematical population equality.

While these concerns do not apply to the alternative map presented in my report, Dr. Lichtman's concerns do apply to Mr. Cooper's "Hypothetical 8-0 Plan" since this plan is a complete reconfiguration of the entire Maryland plan. Mr. Cooper nowhere in his report addresses these concerns, except to note that he "did not take the step to zero out the districts (from .23% overall deviation) in order to achieve perfect population equality" (Cooper p. 5).

Indeed, I have a further concern regarding Mr. Cooper's work. In my work of drawing an alternative map, I discovered that the Ansolabehere and Rodden election data used by Mr. Cooper (Cooper p. 4) fabricates Montgomery County election results. The issue appears to be, as far as I can determine, that Montgomery County split precincts between the time these scholars obtained the election results and when Maryland transmitted precinct boundaries to the Census Bureau for inclusion in the 2010 census geography. This caused some precincts to have no associated election results. To resolve this issue, these scholars appear to have simply cut and pasted the same election results into both portions of the split precincts, effectively doubling the votes. For all of the Montgomery precincts I list (McDonald p. 27), there are identical election results for an adjacent precinct. I cannot know from the information provided to me how deeply this issue affects Mr. Cooper's work. I also do not know the degree to which this issue is present in other Maryland counties outside those containing the Sixth District in part.

### **Compactness**

Dr. Lichtman wishes to undermine my assessment that my proposed alternative redistricting plan for the Sixth and Eight congressional districts improves upon the adopted district in terms of compactness. He notes that I have "...criticized the use of compactness criteria..." (Lichtman p. 40), and that I have noted there are over fifty "compactness measures, which have not resulted in clarity, since these measures conflict and can be manipulated" (Lichtman p. 35). If Dr. Lichtman believes that I have manipulated my compactness analyses by cherry-picking measures I choose to present, it is incumbent upon him to present such evidence. However, Prof. Lichtman presents no evidence or analysis regarding the compactness any district.

### **Arlington Heights**

Dr. Lichtman (p. 40) faults me for not following the legal standard in *Village of Arlington Heights v. Metropolitan Housing Development Corp.*, 429 U.S. 252 (1977). Plaintiffs to this action did not ask me to examine these *Arlington Heights* factors. Instead, they asked me to provide analysis pertinent to the three questions set forth in my Initial Report and this report. I offer no opinion as to whether or not they apply to the matters in this case.

### **Exposition Error in My Report**

Dr. Lichtman points out that I misstated that the Maryland State Board of Elections only releases publicly in-person early votes at the precinct level. In fact, the Board of Elections only

publicly releases Election Day votes. However, this error in exposition does not affect any of my computations. Indeed, the statistics reported for the Sixth Congressional District in Table 3 of my initial report (McDonald p. 10) and his statistics in Table 1 of his report (Lichtman p. 7) are substantially similar. There are two differences that do not substantially affect our conclusions:

- 1) Dr. Lichtman's statistics include a special tabulation of the in-person early vote from the State Board of Elections (Lichtman footnote 11, p. 6), while I do so by tabulating the total county votes for counties entirely contained in a district and by apportioning these votes from the country data in counties split by more than one district.
- 2) Dr. Lichtman does not include absentee or provisional votes, which constitute "fewer than ten percent of votes cast" (Lichtman footnote 11, p. 6), while I do include these votes. I do so by tabulating the total county votes for counties entirely contained in a district (something Dr. Lichtman could have also done to check his implied claim of minimal effect from excluding these votes) and by apportioning these votes from the country data in counties split by more than one district.

## Summary

In my initial report, I focused on three questions that Plaintiffs tasked me with answering:

- 1) Whether Maryland's 2011 Congressional Plan resulted in vote dilution that was sufficiently serious to produce a demonstrable and concrete adverse effect on a group of voters?
- 2) Whether the Maryland General Assembly or its mapmakers specifically intended to burden the representational rights of certain citizens because of how they voted in the past and the political party with which they had affiliated?
- 3) Whether the lines of the Sixth Congressional District would have been drawn as they were but for the map drawer's and General Assembly's consideration of partisan goals to the detriment of traditional redistricting principles?

Most of Dr. Lichtman's criticisms do not relate to the analysis and conclusions that I draw regarding these three questions. Instead, he criticizes me for confining my analysis to these questions.

Beyond these three questions, Dr. Lichtman makes three errors in analyses of election results that undermine his conclusions:

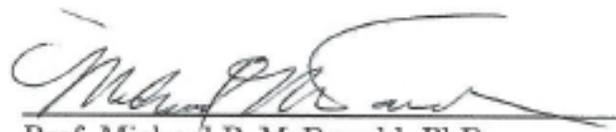
- 1) In an analysis of partisan gerrymandering following a method I used in *Perez v. Perry*, Dr. Lichtman fails to consider the effect of Maryland's redistricting plan for typical elections in the state. When I do so, I conclude that Maryland Democrats executed a Democratic gerrymander.
- 2) In an analysis of partisan gerrymandering using a method known as the efficiency gap, Dr. Lichtman makes a critical math error that leads him to falsely conclude that the adopted congressional plan favors the Republicans when it favors the Democrats.
- 3) In an analysis of competitive districts, Dr. Lichtman uses the wrong range of what I believe constitutes a competitive district, leading him to falsely conclude the Sixth

Congressional District has an equal chance of electing a Democrat or a Republican candidate.

Together, correction of these errors leads me to concur with Dr. Lichtman that “2011 Maryland congressional redistricting plan improved Democratic prospects in Maryland’s Congressional District 6 as compared to the prior redistricting plan” (Lichtman p. 2). I further concur with him that a goal of Maryland Democrats was to execute a gerrymander of equal efficacy “...in line with other party-dominated states” (Lichtman p. 44).

After reviewing Dr. Lichtman’s report and correcting his analyses, it remains my opinion that the adopted Sixth Congressional District has a concrete and adverse effect on Republicans residing in the district, that Maryland Democrats intended this outcome, and that this partisan goal superseded respect of traditional redistricting principles in the creation of the adopted Sixth Congressional District.

Date: May 22, 2017



Prof. Michael P. McDonald, PhD