A Statistical Analysis of the Ohio Citizens Redistricting Commission's

Ohio Congressional District Plan

An Addendum to

The Redistricting Crisis: How Gerrymandering Is Being Used to Steal the US Congress

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This is a summary analysis of the Ohio congressional district plan sponsored by the Ohio Citizens Redistricting Commission (OCRC).

Like other plans submitted by Democrats in Ohio, the OCRC's plan is predicated on a notion of proportional representation, which I have shown in my report to the redistricting commission co-chairs entitled *The Redistricting Crisis: How Gerrymandering Is Being Used to Steal the US Congress* is a matter of unconstitutional gerrymandering. Therefore, the only thing that needs to be done in order to demonstrate that the OCRC's plan is an unconstitutional, partisan gerrymander is to show that it does not deviate from the other plans submitted to the Ohio Redistricting Commission by Democrats. For the sake of brevity, I will limit that discussion to the Yuko map representing the Senate Democratic Caucus, and the Karch map representing the intent of the Ohio League of Women Voters, as I have already analyzed each of these in the report. As much as I would love to stand here and challenge the OCRC's assertion that their plan meets all the constitutional criteria, that is a moot question in light of the statistical evidence which I will present here. My focus on empirical proofs demonstrating that the OCRC's plan is unquestionably a deliberate partisan gerrymander should not be interpreted as absence of other legal or political considerations, however.

Allow me to start by acknowledging that federal law does protect minority representation, and that blacks generally vote Democrat, such as in the cities of Cleveland and Columbus, so the Democrats are entitled to at least 2 of Ohio's congressional districts as long as they have the support of the residents of those cities. But 2 is not 5 or 6 or 7, and 2 out of 15 is 13 and one third percent. Considering that blacks make up 14% of the state's population, this is as close as you can get to proportional representation. Anyone who tells you the Democrats are entitled to more than this based on racial demographics is lying to you.

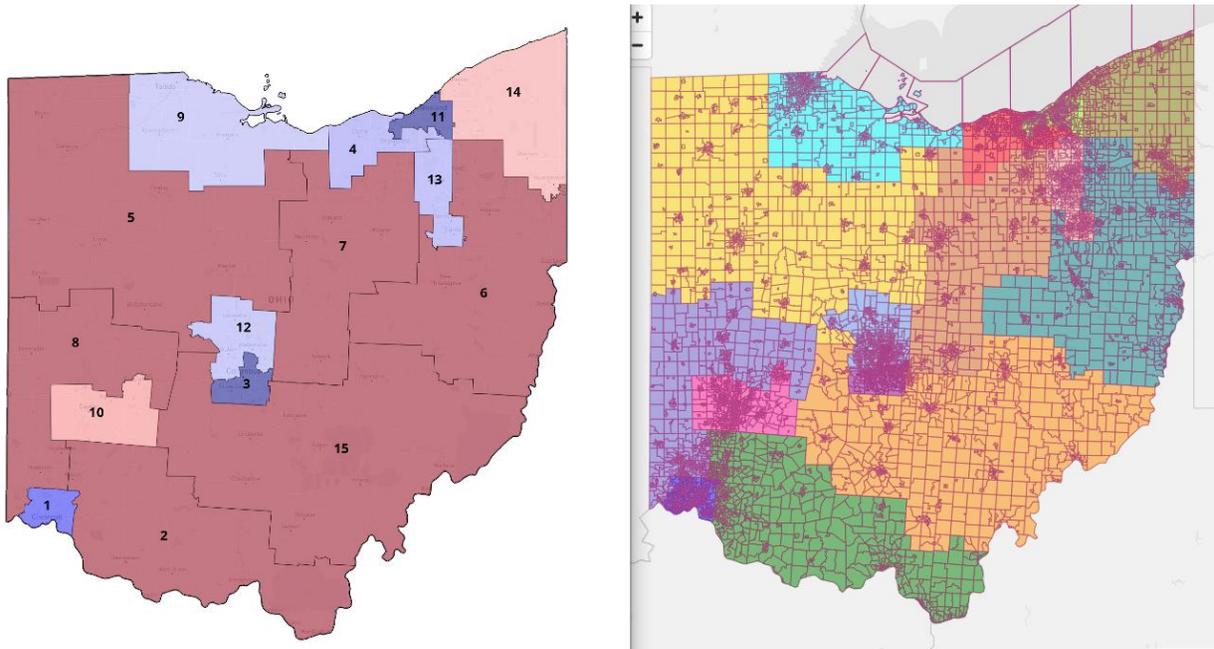Now, here is my replication of the OCRC's map in the Dave's Redistricting App.

Figure a-1: The OCRC's 2022 Ohio congressional district plan, and my replication of it using DRA 2020

It is not a perfect replica, but I did what I could with what was provided. However far off my data are is a negligible amount—certainly not enough to invalidate the analysis. As you will see, the trend is exactly in line with statistical expectations, such as I have described from the equivalent data supplied by the Senate Democrats.

As discussed in my report, statistical variance is an objective means for identifying the relative amount of gerrymandering from one districts map to another, and the soundness of a map proposal based on an argument for proportional representation is dependent on how well it conforms to a uniform distribution function demonstrating a trend toward the statewide voting margins average, as the opposite course of artificially creating districts disproportionate to this distribution is by definition gerrymandering and contrary to Ohio law. This assumes that an argument of statewide, as opposed to nationwide, proportional representation is even constitutionally valid, which it is clearly not, but I am giving them the benefit of the doubt for the sake of the argument.

Using the DRA 2020 data, the variance which I have calculated between the OCRC's plan's districts' margins is up from the current map's 675.3 to 752.3, an increase of 11.4%. It is actually more of a partisan gerrymander than the map proposed by the Senate Democrats is. In fact, with a Congressional Districts Gerrymandering Index score of 250, the OCRC wants to make Ohio the third most gerrymandered state in the nation, in the name of fairness. It should come as no surprise, then, that the OCRC's map fails all three of the statistical litmus tests for gerrymandering which I have presented in my report.

1	55.1	42.6	-12.5
2	28.8	68.9	40.1
3	66.8	30.8	-36
4	51.7	46	-5.7
5	26.5	70.6	44.1
6	35.2	62.2	27
7	33.3	64.1	30.8
8	29	68.6	39.6
9	50.4	46.7	-3.7
10	45.4	52.1	6.7
11	75.2	22.9	-52.3
12	51	46.9	-4.1
13	51.4	46.1	-5.3
14	46.2	51.3	5.1
15	34.3	63.3	29

n	15
Σx	102.8
μ	6.853333333
σ^2	752.3078222
σ	27.42823039

Table 1: OCRC plan districts margins data (approximate) with normal distribution function values

First, here is a box and whisker plot of the districts margins variance. I have done this for every state with two or more congressional districts, and this is easily among the five worst.
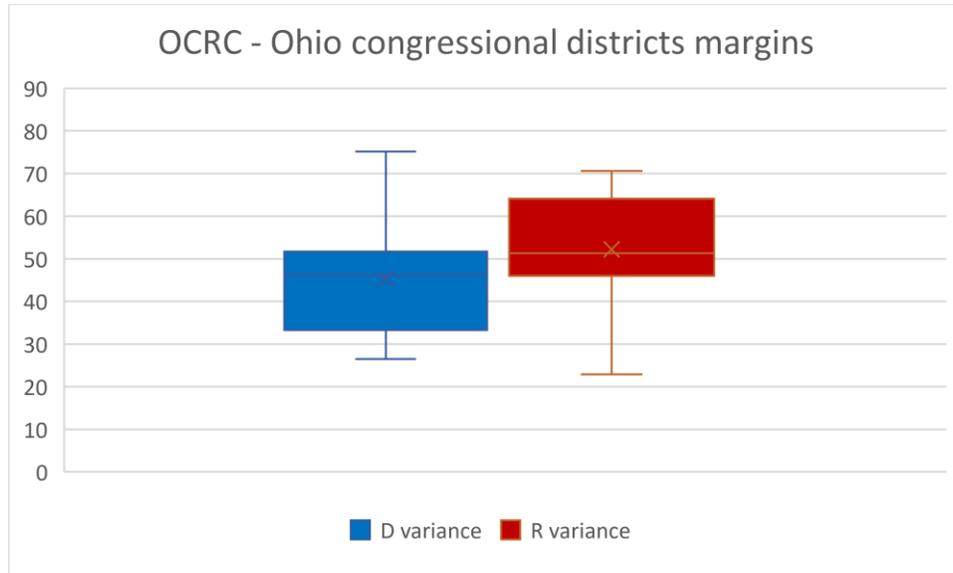

Figure a-2: Variance of the OCRC plan's congressional districts margins

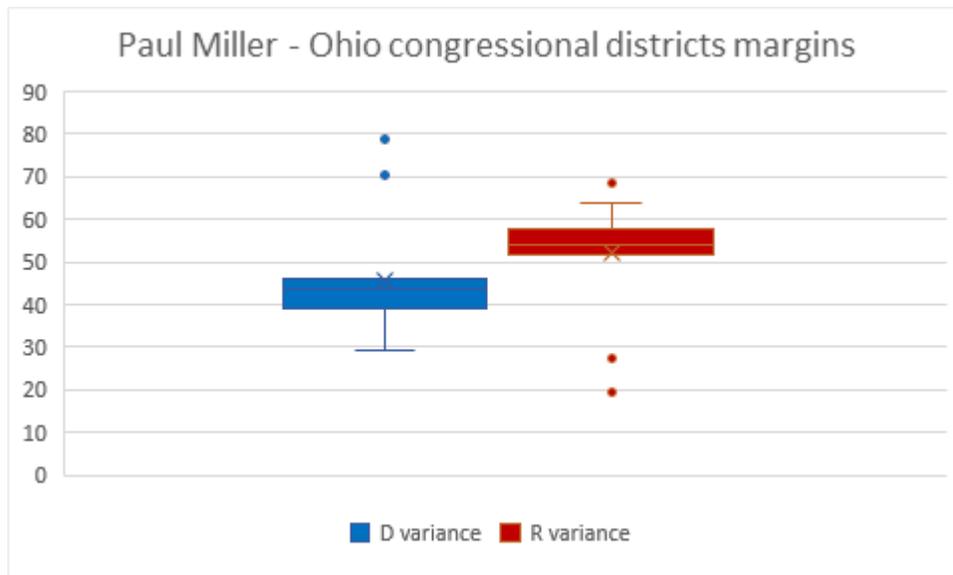For comparison, here is what the graph should look like if there is no gerrymandering.

Figure a-3: Variance of the Miller plan's congressional districts margins

Whereas the OCRC map shows an increase in variance above the current one, mine reduces it to just 80% of the OCRC's value. That is equivalent to 3 whole district populations that they have gerrymandered to give the Democrats an extra 5 districts.

Second, here is histogram showing the probability of the margins distribution. The red line represents the mean. I defy any math professor to explain how this resembles a normal distribution curve for a random variable. You can see exactly where they have loaded all the gerrymandered districts to give Democrats an improbable and unfair advantage in five districts, and how they have compensated for it by creating Republican super-districts that sprawl across the map.
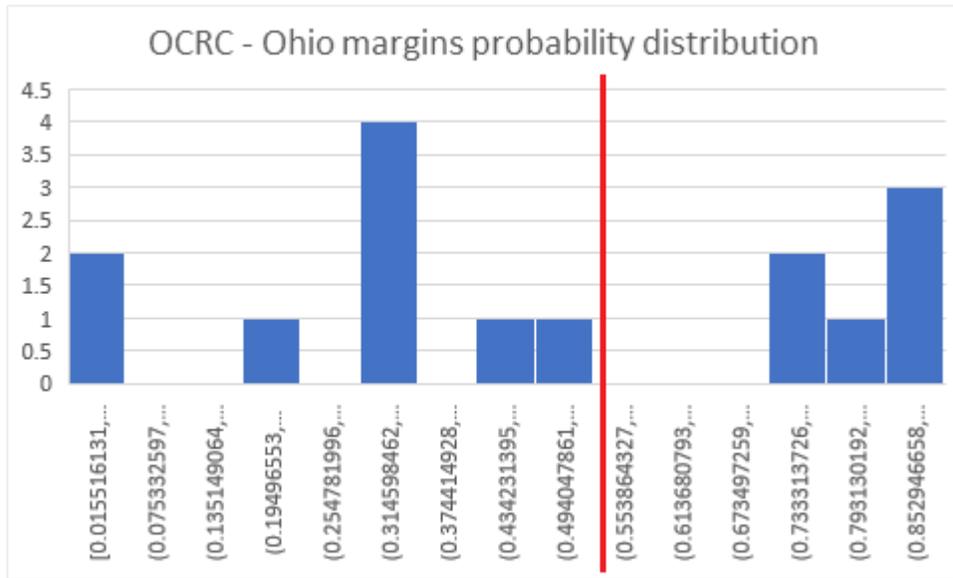

Figure a-4: OCRC plan's districts margins probability curve

For comparison, this is about what a normal distribution curve should look like—if it is random, that is. And by "random" I mean fair, proportionate, not intentionally skewed.
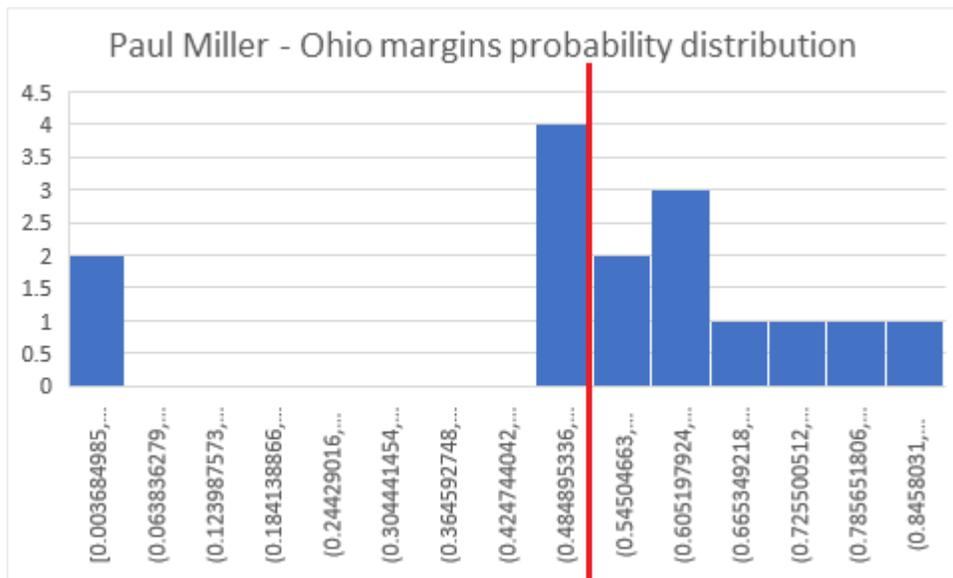

Figure a-5: Miller plan's districts margins probability curve

Finally, the gerrymander is even more obvious in the scatter plot of the margins distributions, whereby we can see exactly what the intent of the plan is.
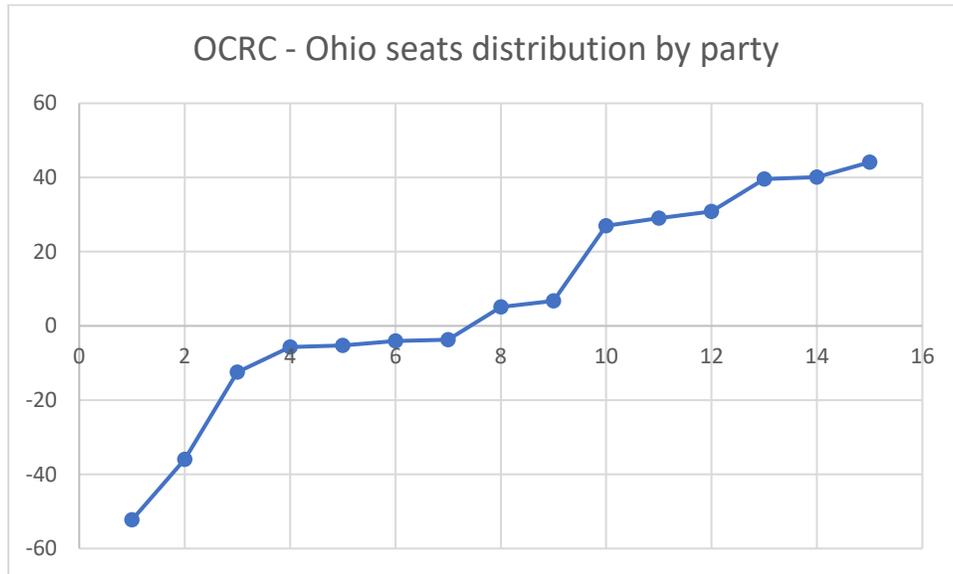

Figure a-6: OCRC plan's seats distribution by party

You could probably justify 3 seats going to the Democrats, and maybe even another one that is evenly-matched if you consider the actual voting demographics across the state, but they want 7. There is only one way to do this, and that is by looking at how people vote along party lines and maximizing the minority party's advantage by concentrating the majority party's votes in some districts in order to dilute them in others. This is what I call "artificial competitiveness." You call it gerrymandering.

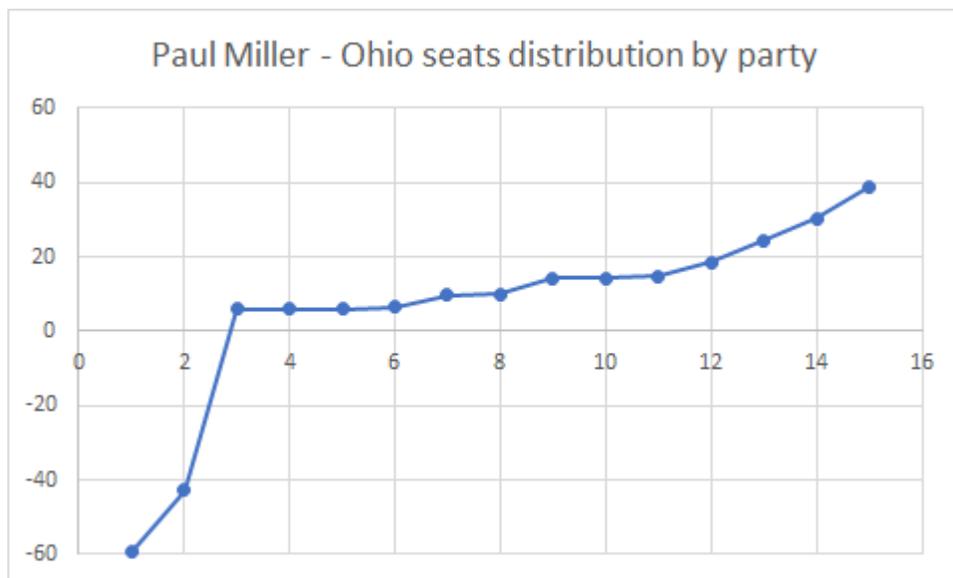For comparison, this is what a uniform distribution curve should look like:

Figure a-7: Miller plan's seats distribution by party

It is not an exaggeration to say that the way I have described is the only way to do it. You can draw the map 10 different ways to achieve your gerrymandering goal and still wind up with the same set of values. An overlay of the Senate Democrats' margins plot with that of the OCRC shows there is virtually no difference.
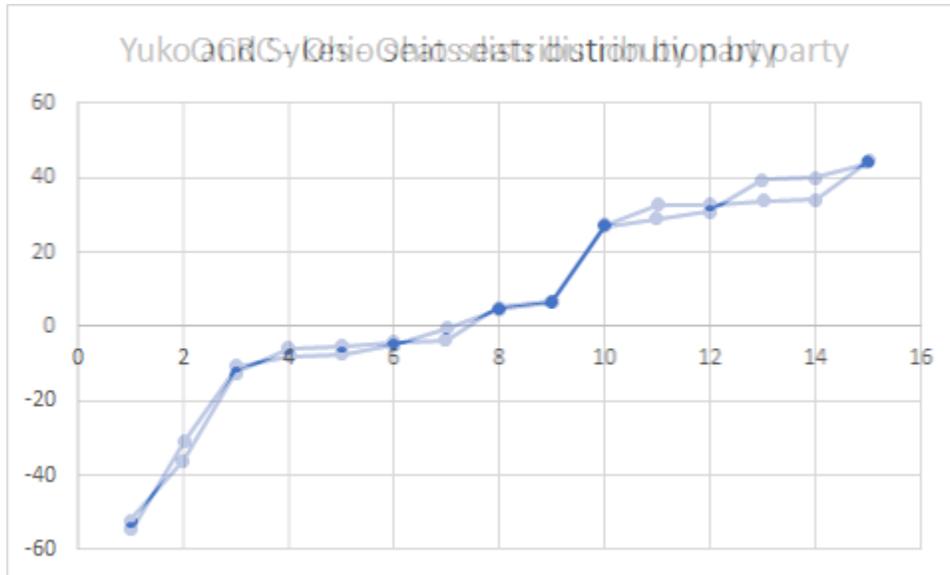

Figure a-8: Overlay of the seats distributions of the OCRC's and Senate Democrats' plans

You do not need to be a math professor to see what is going on here. A child could see it.

Again, the Yuko and OCRC maps demonstrate no discernable difference when we overlay the margins variance graphs. Despite the difference in the extent of the gerrymander, the intent is still evident in the numbers:
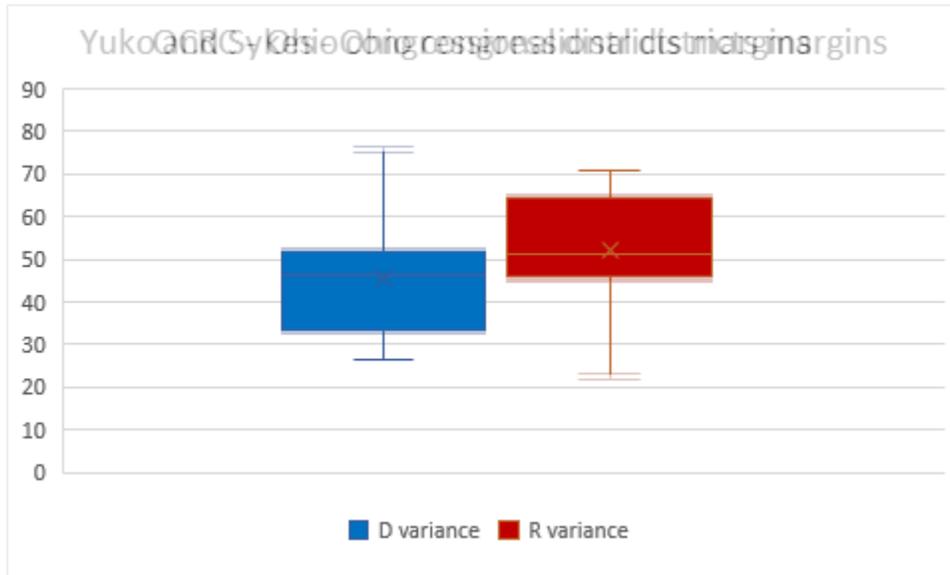

Figure a-9: Overlay of the variances of the OCRC's and Senate Democrats' plans

And here is the Karch graph added as another overlay to demonstrate the League of Women Voters' intent, once again showing no discernable difference in the amount of gerrymandering which it takes to give the Democrats 7 congressional districts, regardless of how the districts are arranged:
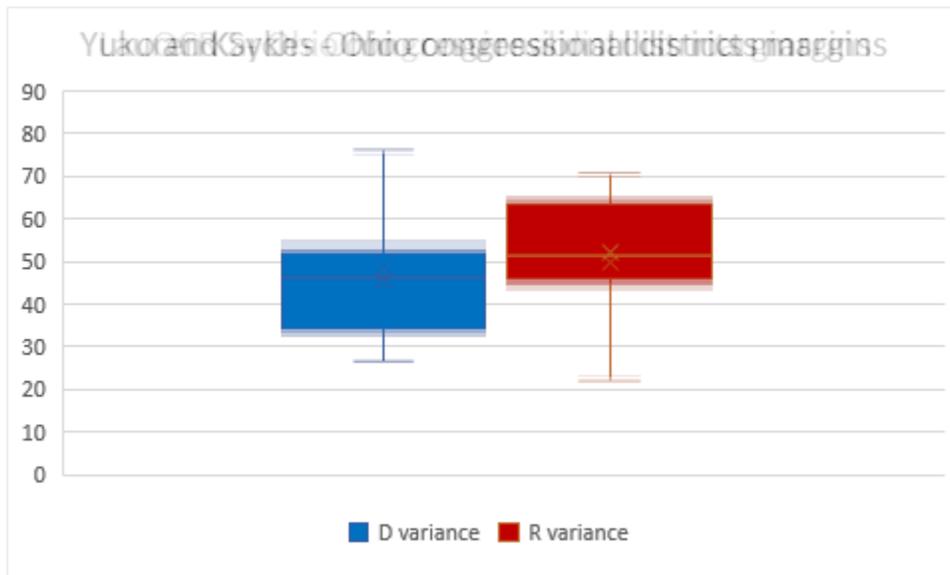

Figure a-10: Overlay of the variances of the OCRC's, Senate Democrats' and Karch plans

Finally, here is a side-by-side comparison between the OCRC plan's distribution of districts with that of the existing Ohio districts map. It could hardly be more evident that the OCRC's map is a deliberate partisan gerrymander. But it is also worth noting that the existing map is not, because the unproven assertion that it is constitutes the whole basis for the push to "reform" the redistricting process, without which the Democrats' partisan political aspirations would not have a leg to stand on.
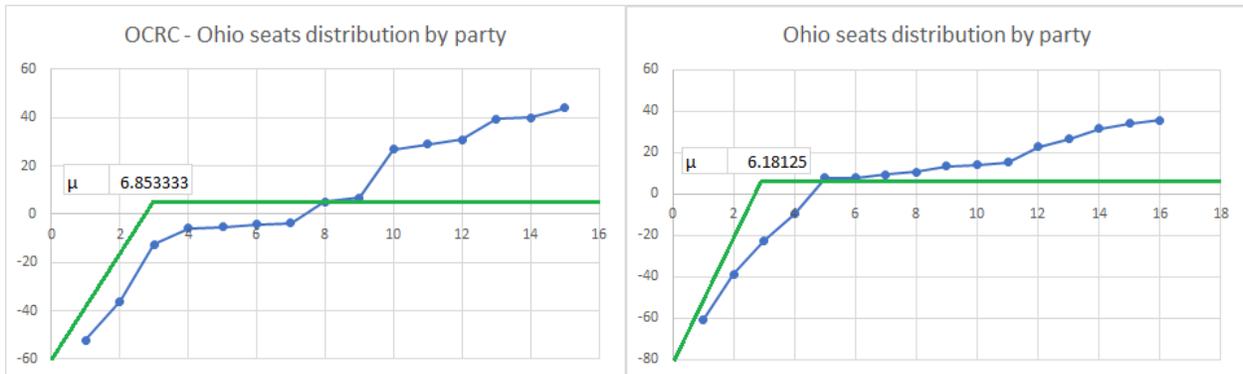

Figure a-11: Comparison of seats distributions between the OCRC's plan with the current Ohio map

Make no mistake: this is not a grassroots initiative driven by Ohio citizens, but a top-down nationwide conspiracy managed by Eric Holder. It is a blatant, unconstitutional gerrymander predicated on an unsound argument against the plurality vote system instituted by our Founding Fathers, selectively applied only where they seek to gain an unfair advantage. And it may have worked for them in Pennsylvania, but this is Ohio.