Alec, I keep worrying that you will be offended by my making too many suggestions, even though you have asked me for them. Your document copied below suggests that I shouldn’t have been worried, and I’m pleased to see that you have important plans. Let me add comments in line, underlined and a few crossouts where I think they are appropriate.

**Research Questions**

The purpose of this note is to flesh out the questions I want to answer to guide my work.

1. What is DRA’s method for evaluating the partisan characteristics of maps?   
     
   Write up the elements of the methodology we used: composite elections, the specific elections, fractional seat probabilities, inferring a seats–votes curve using proportional shift.  You have urged me to do this even though I thought it is in the papers and resisted trying to publish it again. Still, it could be a part of something new that you do.
2. How much does the statewide Democratic two-party vote share (V) vary by election in a state’~~s~~ ~~composite~~? For each ~~map~~ state, calculate the mean V, the SEM, and the RSE.
3. How much do district-by-district Democratic two-party vote shares (vi) vary by election in a state’s composite? For each map, calculate mean vi, SEM, and RSE for each district. And this is in the rank-vote spreadsheet you are doing that I suggested.

Question: Can these be meaningfully aggregated into one (set of) number(s) for each state-map? I see the rank-votes graph that includes the SEM as the most meaningful aggregate set of numbers. A single number is just the average including an average SEM as well as the SD of the individual SEMs for each district. A larger SD indicates that there is a range of volatility in the districts.

1. How much do the Democratic two-party seat shares (sv) for each vote share (v) in a map’s inferred seats–votes curve vary for each election in a state’s composite? For each map, for each point in the inferred seats–votes curve calculate mean sv, SEM, and RSE. Of course, this is what the seats-votes curve with SEMs shows. I think this is the best way to show it.  
     
   Question: What range around V can we constrain this analysis to? Most of the range 25–75% is not realistic for a state-map, and a narrower range should yield an even tighter result. Probably depends on the answer to #5 below.  
     
   Question: Can these be meaningfully aggregated into one (set of) number(s) for each state-map? Of course, some metrics do not depend on V. For those that do, you might consider doing the following weighted average. The weights would be the probability p(V) or the vote V. p(V) would be a Gaussian with its maximum at the statewide average V and its width would be the SD (not the SEM) of the elections. An aggregated metric would then be the integral over V of the product of the metric at vote V and p(V). However, this aggregate suppresses the fact that some metrics are not durable as V varies.
2. How much do partisan analytics vary by election in a state’s composite? (The analysis to definitively answer Moon Duchin.) Let me rephrase this in the way that more transparently responds to Duchin’s criticism: How much do partisan analytics, when average by election, differ from the analytics applied to a state’s composite election?  
     
   Question: What subset of metrics do we want to do this analysis for? I see no good reason to limit them ahead of time.  
     
   For each map and metric, calculate the mean, SEM, and RSE. Compare the mean to the same metric for the composite. Yes  
     
   Question: Is there some formal way we can analyze the differences between the mean value of the metric and the metric for the composite (which is the mean of the elections in it)? The obvious question is whether metric for the composite falls within the range obtained by the SEM for the metric averaged over the elections.

*Note: Answering question about the actual election results requires processing the 2022 election like I have for previous election results and imputing the results for uncontested races.* I do not think district elections are meaningful.

1. How much do *actual* 2022 statewide congressional Democratic two-party vote shares (V) vary from the statewide Democratic two-party vote share (V) for each state’s composite? Again, comparing actual district results is dodgy. Ideally, we could say something like, “Based on this sample, actual congressional Democratic two-party vote shares were within +/–N% of the composite’s statewide vote share.” and have confidence narrowing the range of analysis of the seats–votes curve. The problem with using the composite election is that there is no +/- statistic. Averaging over the metrics for all elections gives you +/-. That can then be compared to the actual seats to see whether specifics pertaining to incumbents, etc., could be significant.   
     
   For each state, calculate the difference (V – V) … Question: I’m a little uncertain how to characterize this variation. Should I calculate the mean difference across states/maps and then SEM and RSE for this? There may be different ways for different questions. For a nationwide estimate of D seats, I would simply average fractional seats for all districts in all states. What you mention gives an estimate of how much variation there is in the states, and then you can do the average either by weighting by the number of districts in the states or not.
2. How well do the inferred seats–votes curves track actual 2022 election results? IOW, given actual statewide congressional Democratic two-party vote shares (V), how well do inferred seat shares (sv) track actual seats (S)? Yes, I commented on this at the end of the first paragraph in #6.  
     
   For each map, interpolate the seat fraction (sv) for the actual statewide congressional Democratic two-party vote share (V) and then the implied first-past-the-post (FPTP) seats (S̿). Compare predicted seats (S̿) to actual seats (S). Yes, this too.  
     
   This feels like it’s going to be a pretty coarse, more qualitative analysis. Not sure I would say that would necessarily be the case.