On DRA’s Use of Composite Elections

Alec Ramsay, Dave’s Redistricting[[1]](#footnote-1)

Abstract

[TODO]

Word count: [TODO] words, excluding references.

Keywords: redistricting, methodology, partisan gerrymandering, partisan fairness, partisan advantage

Introduction

This paper compares Dave’s Redistricting’s approach of using composite elections to the alternative of computing the metrics for the individual elections and then averaging the results.

Dave’s Redistricting is also known as DRA 2020, and hereafter I refer to simply as DRA.

[TODO]

# Partisan Analytics in DRA

In DRA we implemented a version of John Nagle’s method for evaluating the partisan characteristics of maps. The method starts with a map described in terms of the statewide two-party Democratic vote share and the district-by-district two-party Democratic vote shares. We sometimes call this a “partisan profile.” It then estimates the corresponding fractional Democratic seat probability[[2]](#footnote-2) and infers a seats­–votes curve using proportional shift. Then it calculates a variety of partisan analytics for the map.

Text, table

Description automatically generated

The map is described in terms of a single election. To evaluate a map with respect to multiple elections, one has two choices:

1. Analyze the map for each election individually and then average the results, or
2. Combine the elections into a composite election and then analyze the map for that

To keep our user experience simple for a mass audience[[3]](#footnote-3) and to substantially reduce data download costs,[[4]](#footnote-4) we chose the latter approach. Our election composite averages six elections from 2016–2020:[[5]](#footnote-5)

* The last two Presidential elections
* The last two US Senate elections, and
* The most recent Gubernatorial and state Attorney General elections

It is a proxy of future voting behavior based on past voting behavior.

Advanced users can also analyze maps using individual elections one a time.

Cases can be made for both approaches, but they are not the same mathematically. The question is, do the differences make a difference?

# Study Methodology

[TODO:

* Repository – data/ and analysis/ directories
* Maps & elections by state
* Workflow

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Results

[TODO]

References

Dave’s Redistricting (DRA). Website at <https://davesredistricting.org>.

Dave’s Redistricting analytics (dra-analytics). Website at <https://github.com/dra2020/dra-analytics>.

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[end]

1. I work on Dave’s Redistricting in Seattle, Washington, USA. I especially thank Dave’s Redistricting whose tools made this study possible. [↑](#footnote-ref-1)
2. For details, see https://lipid.phys.cmu.edu/nagle/Technical/FractionalSeats2.pdf. [↑](#footnote-ref-2)
3. We have ~20,000 users. [↑](#footnote-ref-3)
4. By downloading just one election, our download costs for election data are 1/6th of downloading all six. [↑](#footnote-ref-4)
5. For more, see “Election Composites” @ https://medium.com/dra-2020/election-composites-13d05ed07864. [↑](#footnote-ref-5)