Measuring Competitiveness in Redistricting

Eric McGhee

PlanScore
Outline

• What does “competitive” mean?
• How might “competitive” be measured?
• How does competitiveness relate to bias?
• How might PlanScore help?
What does “competitive” mean?

• Partisan
  • Supporting candidates as representatives of parties
  • Party performance is what matters

• Personal
  • Supporting candidates as individuals
  • Individual candidate record is what matters
What does “competitive” mean?

• Redistricting is partisan not personal
  • “To the extent practicable, competitive districts should be favored where to do so would create no significant detriment to the other goals.”
  • “Party registration and voting history data…may be used to test maps for compliance with the above goals. The places of residence of incumbents or candidates shall not be identified or considered.”

COMPETITIVE:
• District’s partisanship makes it possible to be held by more than one party over its lifetime
  • Personal uncertainty
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How might “competitive” be measured?

• Party registration: WORST
  • Votes matter more than labels on a registration form
  • What about “other”?  
    • Usually closet partisans
    • Usually not “swing voters”

• Vote for statewide office: BETTER
  • What matters is votes for the office the district is drawn to represent
  • Need to know relationship between statewide office and office in question
How might “competitive” be measured?

• Expected vote: BEST
  • Use statewide office and past outcomes to predict party performance
  • Fewest assumptions; most data-driven

• Two approaches
  • Average election (with uncertainty)
  • Average + partisan tides
How might “competitive” be measured?

• Average election (with uncertainty)
  • Pick some two-party vote range that seems competitive (e.g., 55%/45%, 53%/47%)
  • Factor in uncertainty about the expected outcome

• Average + partisan tides
  • What is a typical partisan tide, and will a district flip under those conditions?
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• **How does competitiveness relate to bias?**
• How might PlanScore help?
How does competitiveness relate to bias?

• Bias = efficiency
  • Party supporters that don’t contribute to victory might help win a neighboring district instead
    • Votes for losers
    • Votes in excess of number needed for winners
  • Party that wins its seats by smaller margins makes better use of its supporters

• All bias metrics measure some aspect of efficiency
  • For AZ, all give broadly similar results
How does competitiveness relate to bias?

• Uncompetitive seats “use up” partisans of one side
  • Easier to create competitive seats on the other side
  • Might lead to accidental partisan results
50 VOTERS

20 BLUE
30 RED
5 DISTRICTS

3 BLUE
2 RED
9 RED - 1 BLUE
4 RED – 6 BLUE
How does competitiveness relate to bias?

- Uncompetitive seats “use up” partisans of one side
  - Easier to create competitive seats on the other side
  - Might lead to accidental partisan results

- To avoid bias, balance competitiveness
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How might PlanScore help?

- PlanScore
  - Nonpartisan redistricting resource
  - Predict partisan outcomes of plans
  - Calculate bias metrics
  - Historical bias metrics
Try our scoring service for new district plans. Upload a map to instantly receive projected data about its partisan consequences. Previously, this sort of analysis was available only to the parties’ line-drawers.

Learn more about our methodology and its validation here.

Upload a district plan as a geospatial file containing Polygon or MultiPolygon shapes. These file types are currently supported:

- Shapefile (upload as a single .zip file)
- GeoJSON
- Geopackage

Select a file to upload

Processing time depends on the complexity of the district plan, and may take a few seconds or many minutes.

Optional: Incumbent Candidates

If you know which districts have incumbents running for re-election, select their party affiliation below for a more accurate prediction.

<table>
<thead>
<tr>
<th>District</th>
<th>Candidate Scenario</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Democratic Incumbent</td>
<td>Unknown or Open Seat</td>
<td>Republican Incumbent</td>
</tr>
<tr>
<td>2</td>
<td>Democratic Incumbent</td>
<td>Unknown or Open Seat</td>
<td>Republican Incumbent</td>
</tr>
<tr>
<td>3</td>
<td>Democratic Incumbent</td>
<td>Unknown or Open Seat</td>
<td>Republican Incumbent</td>
</tr>
<tr>
<td>4</td>
<td>Democratic Incumbent</td>
<td>Unknown or Open Seat</td>
<td>Republican Incumbent</td>
</tr>
<tr>
<td>5</td>
<td>Democratic Incumbent</td>
<td>Unknown or Open Seat</td>
<td>Republican Incumbent</td>
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<tr>
<td>6</td>
<td>Democratic Incumbent</td>
<td>Unknown or Open Seat</td>
<td>Republican Incumbent</td>
</tr>
<tr>
<td>7</td>
<td>Democratic Incumbent</td>
<td>Unknown or Open Seat</td>
<td>Republican Incumbent</td>
</tr>
<tr>
<td>8</td>
<td>Democratic Incumbent</td>
<td>Unknown or Open Seat</td>
<td>Republican Incumbent</td>
</tr>
<tr>
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<td>Democratic Incumbent</td>
<td>Unknown or Open Seat</td>
<td>Republican Incumbent</td>
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</table>
PlanScore bases its scores on predicted precinct-level votes for each office (State House, State Senate, and U.S. House) built from past election results and U.S. Census data. More information about the predictive model used to score this plan.

Efficiency Gap: 0.1%
Partisan Bias: 2.0%
Mean-Median Difference: 0.6%

Votes for Democratic candidates are expected to be wasted at a rate 0.1% lower than votes for Republican candidates. The expected gap favors Democrats in 52% of predicted scenarios.

Republicans would be expected to win 2.0% extra seats in a hypothetical, perfectly tied election. The expected bias favors Republicans in 61% of predicted scenarios.

The median Republican vote share is expected to be 0.6% higher than the mean Republican vote share. The expected difference favors Republicans in 61% of predicted scenarios.

Sensitivity Testing
Sensitivity testing shows us a plan’s expected efficiency gap given a range of possible vote swings. It lets us evaluate the durability of a plan’s skew.
<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Open Seat</td>
<td>710,671</td>
<td>771,735</td>
<td>3.5%</td>
<td>23.3%</td>
<td>567,935</td>
<td>94%</td>
<td>50% D / 50% R</td>
<td>187,206</td>
<td>180,700</td>
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<tr>
<td>2</td>
<td>Open Seat</td>
<td>710,276</td>
<td>707,895</td>
<td>5.4%</td>
<td>28.8%</td>
<td>532,599</td>
<td>79%</td>
<td>54% D / 46% R</td>
<td>213,393</td>
<td>171,776</td>
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<tr>
<td>3</td>
<td>Open Seat</td>
<td>710,731</td>
<td>759,621</td>
<td>5.9%</td>
<td>63.0%</td>
<td>471,505</td>
<td>99%</td>
<td>61% D / 39% R</td>
<td>174,830</td>
<td>99,516</td>
</tr>
<tr>
<td>4</td>
<td>Open Seat</td>
<td>711,441</td>
<td>780,671</td>
<td>2.6%</td>
<td>19.1%</td>
<td>601,493</td>
<td>&lt;1%</td>
<td>34% D / 66% R</td>
<td>126,020</td>
<td>280,115</td>
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<tr>
<td>5</td>
<td>Open Seat</td>
<td>710,787</td>
<td>819,910</td>
<td>4.7%</td>
<td>18.4%</td>
<td>572,846</td>
<td>8%</td>
<td>44% D / 56% R</td>
<td>195,260</td>
<td>262,881</td>
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<td>6</td>
<td>Open Seat</td>
<td>710,284</td>
<td>792,499</td>
<td>4.0%</td>
<td>17.4%</td>
<td>580,340</td>
<td>33%</td>
<td>48% D / 52% R</td>
<td>204,364</td>
<td>222,153</td>
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<tr>
<td>7</td>
<td>Open Seat</td>
<td>710,240</td>
<td>811,651</td>
<td>11.6%</td>
<td>64.0%</td>
<td>431,112</td>
<td>&gt;99%</td>
<td>70% D / 30% R</td>
<td>165,131</td>
<td>55,430</td>
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<tr>
<td>8</td>
<td>Open Seat</td>
<td>710,578</td>
<td>788,596</td>
<td>5.9%</td>
<td>20.6%</td>
<td>583,841</td>
<td>6%</td>
<td>43% D / 57% R</td>
<td>181,713</td>
<td>251,458</td>
</tr>
<tr>
<td>9</td>
<td>Open Seat</td>
<td>710,224</td>
<td>786,011</td>
<td>7.7%</td>
<td>27.4%</td>
<td>555,241</td>
<td>98%</td>
<td>59% D / 41% R</td>
<td>224,196</td>
<td>137,706</td>
</tr>
</tbody>
</table>
How might PlanScore help?

<table>
<thead>
<tr>
<th>District</th>
<th>Actual 2020 Vote</th>
<th>PlanScore Prediction (open)</th>
<th>Planscore Prediction (with incumbency)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>52%</td>
<td>50%</td>
<td>53%</td>
</tr>
<tr>
<td>2</td>
<td>55%</td>
<td>54%</td>
<td>56%</td>
</tr>
<tr>
<td>3</td>
<td>65%</td>
<td>61%</td>
<td>63%</td>
</tr>
<tr>
<td>4</td>
<td>30%</td>
<td>34%</td>
<td>32%</td>
</tr>
<tr>
<td>5</td>
<td>41%</td>
<td>44%</td>
<td>41%</td>
</tr>
<tr>
<td>6</td>
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<td>48%</td>
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<td>77%</td>
<td>70%</td>
<td>73%</td>
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<td>8</td>
<td>40%</td>
<td>43%</td>
<td>40%</td>
</tr>
<tr>
<td>9</td>
<td>62%</td>
<td>59%</td>
<td>62%</td>
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