Analytics in DRA 2020

Redistricting Data Hub

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Overview

1. Importing maps into DRA
2. Quick tour of analytics
3. Primer on estimating partisan advantage

1 — Importing Maps

Importing Maps

- Plans that have already been imported:
  - As plans get adopted, we import them into the Official Maps collection.
  - redistrict2020.org also has map links for many proposed & adopted plans.
- Import plans yourself:
  - Block-assignment files (preferred) -or- shapefiles or GeoJSON
  - Top-level *Import* (server) -or- *Color Map from File* (client) options

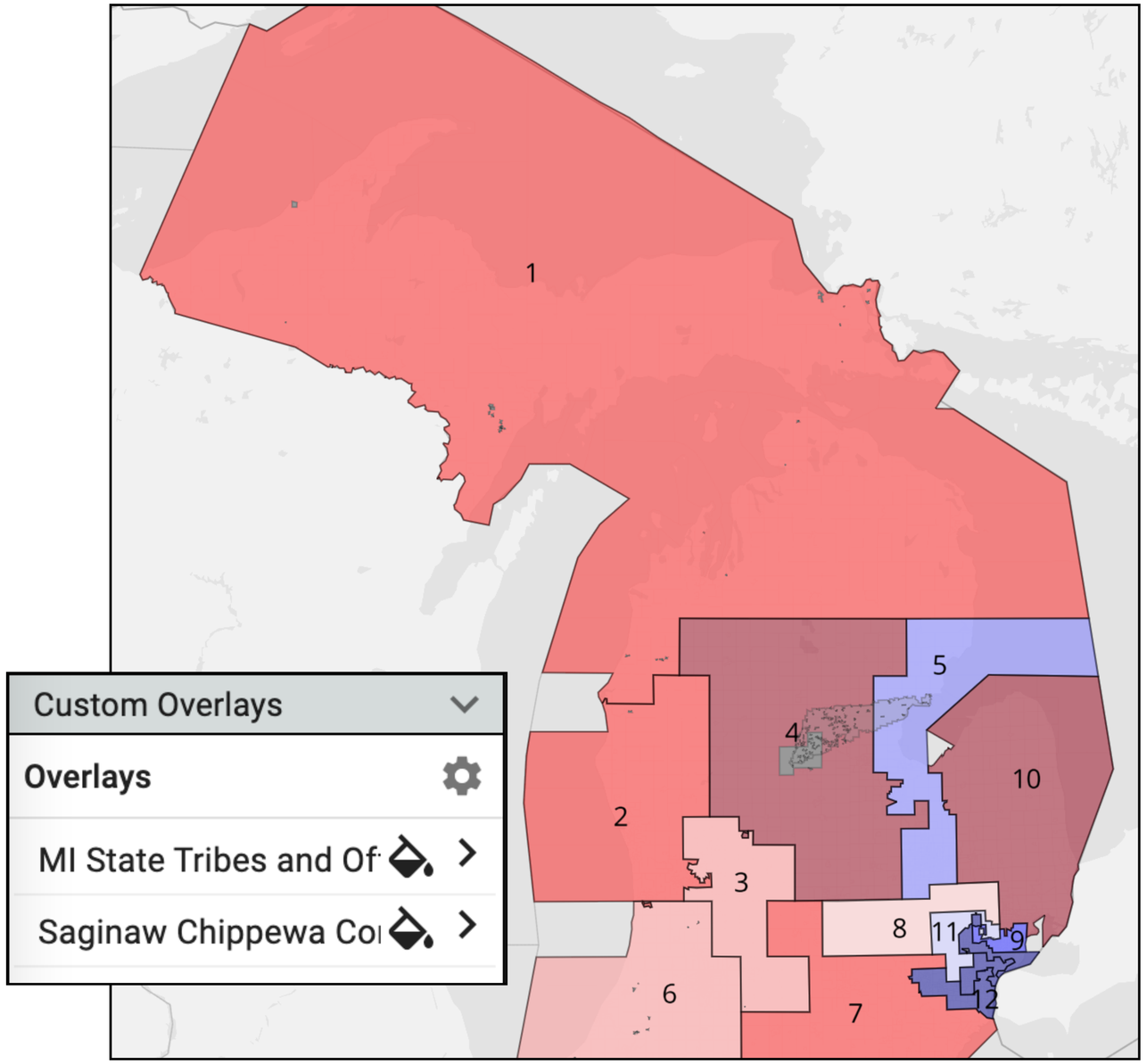
“Importing Maps” (https://bit.ly/3whK0OC)

2 — Tour

Map tab

Draw maps & communities

- Paint districts using precincts, counties, cities, or blocks
- Color districts by partisan lean
- Draw communities in DRA or import them from other tools & overlay them onto maps



MI 2020 Congressional Map

"Coloring Districts & Precincts" (https://bit.ly/2RcnD9D)
"Drawing Communities" (https://bit.ly/3CM1FAE)

Statistics tab

See basic district info

- Population & deviation
- Contiguity & ‘donut holes’
- Partisan lean
- Minority VAP or CVAP
- Also prisoner-adjusted

	Population		Partisan Lean			Demographics (VAP)		
ID	Total	+/-	Dem	Rep	Oth	Minority	Hispanic	Black
Un	0		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1	705,974	0.00%	42.07%	54.93%	3.01%	6.79%	1.06%	1.67%
2	705,975	0.00%	41.48%	55.27%	3.24%	15.68%	6.52%	6.24%
3	705,974	0.00%	45.41%	51.31%	3.28%	16.54%	5.37%	8.84%
4	705,974	0.00%	40.10%	56.64%	3.26%	6.49%	2.08%	2.16%
5	705,975	0.00%	54.70%	42.39%	2.91%	22.31%	3.59%	16.87%
6	705,974	0.00%	46.41%	50.33%	3.25%	14.83%	4.04%	8.26%
7	705,974	0.00%	44.12%	52.91%	2.97%	9.35%	3.08%	4.46%
8	705,975	0.00%	48.00%	49.32%	2.68%	14.31%	3.71%	5.79%
9	705,975	0.00%	56.65%	40.64%	2.71%	15.40%	1.71%	9.17%
10	705,974	0.00%	38.65%	58.71%	2.64%	7.31%	2.29%	2.73%
11	705,974	0.00%	48.96%	48.69%	2.34%	15.70%	2.57%	5.08%
12	705,974	0.00%	65.25%	32.22%	2.53%	21.11%	4.26%	10.40%
13	705,974	0.00%	80.87%	16.84%	2.29%	64.06%	5.48%	56.79%
14	705,974	0.00%	79.44%	18.79%	1.77%	65.99%	3.71%	58.16%
	705,974	**0.00%**	**51.48%**	**45.74%**	**2.79%**	**20.94%**	**3.51%**	**13.87%**

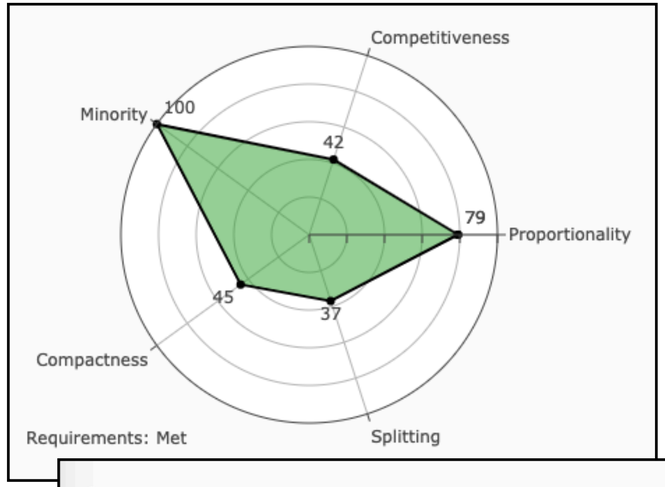
Note: Some columns elided for space.

“District Statistics” (https://bit.ly/2ZKqCOF)

Analyze tab

Rate maps on key dimensions

- Five dimensions
- Raw metrics normalized to [0–100]
- Bigger is always better
- Enable *relative* comparisons
- Together the *gestalt* of a map
- Notables characterize PG trade-offs
- COI, incumbency, etc. not measured



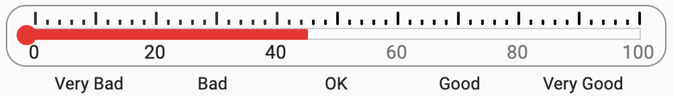
A section for each dimension

Compactness

All else equal, prefer maps with districts that are more compact.

Metric		Description
• Reock	0.3545	Measures how dispersed district shapes are. Bigger is better.
• Polsby-Popper	0.2865	Measures how indented district shapes are. Bigger is better.

Rating



Notes

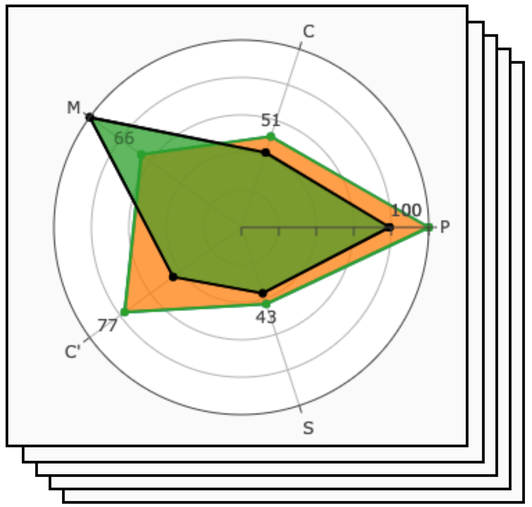
- In contrast, using a common "know it when you see it" understanding of compactness (KIWYSI), people intuitively judge the compactness of these districts to be 47 of 100. See How to Measure Legislative District Compactness If You Only Know it When You See It for details.
- Compact districts aren't always fair. To the extent that a state's political geography has a significant urban-rural political divide, maps with more compact districts tend to be less proportional, and maps that are more proportional tend to have less compact districts.

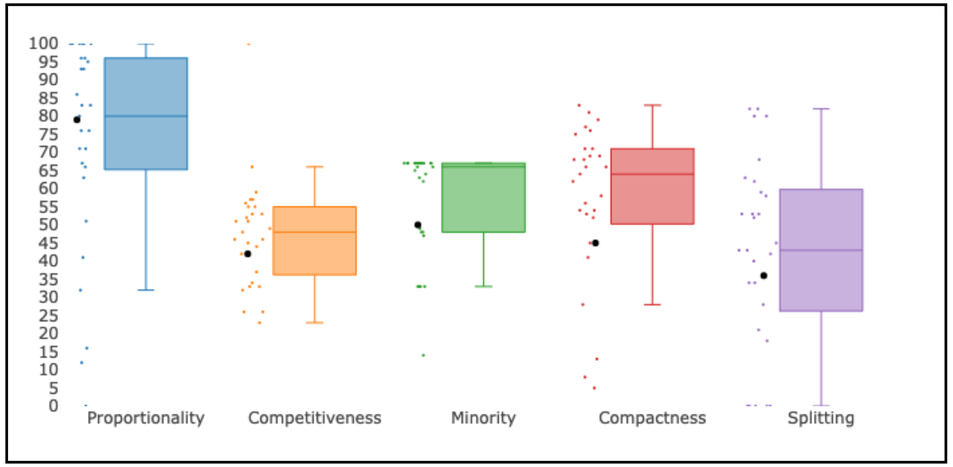
"Analyzing Maps" (https://bit.ly/2GEtbrm)
"Ratings: Deep Dive" (https://bit.ly/31tK3eX)
"Notable Maps" (https://bit.ly/3k5rYdI)

Compare tab

Understand key tradeoffs

- Compare ratings to Notable Maps or up to 5 maps you pick
- Compare ratings to similar maps
- Compare districts across maps



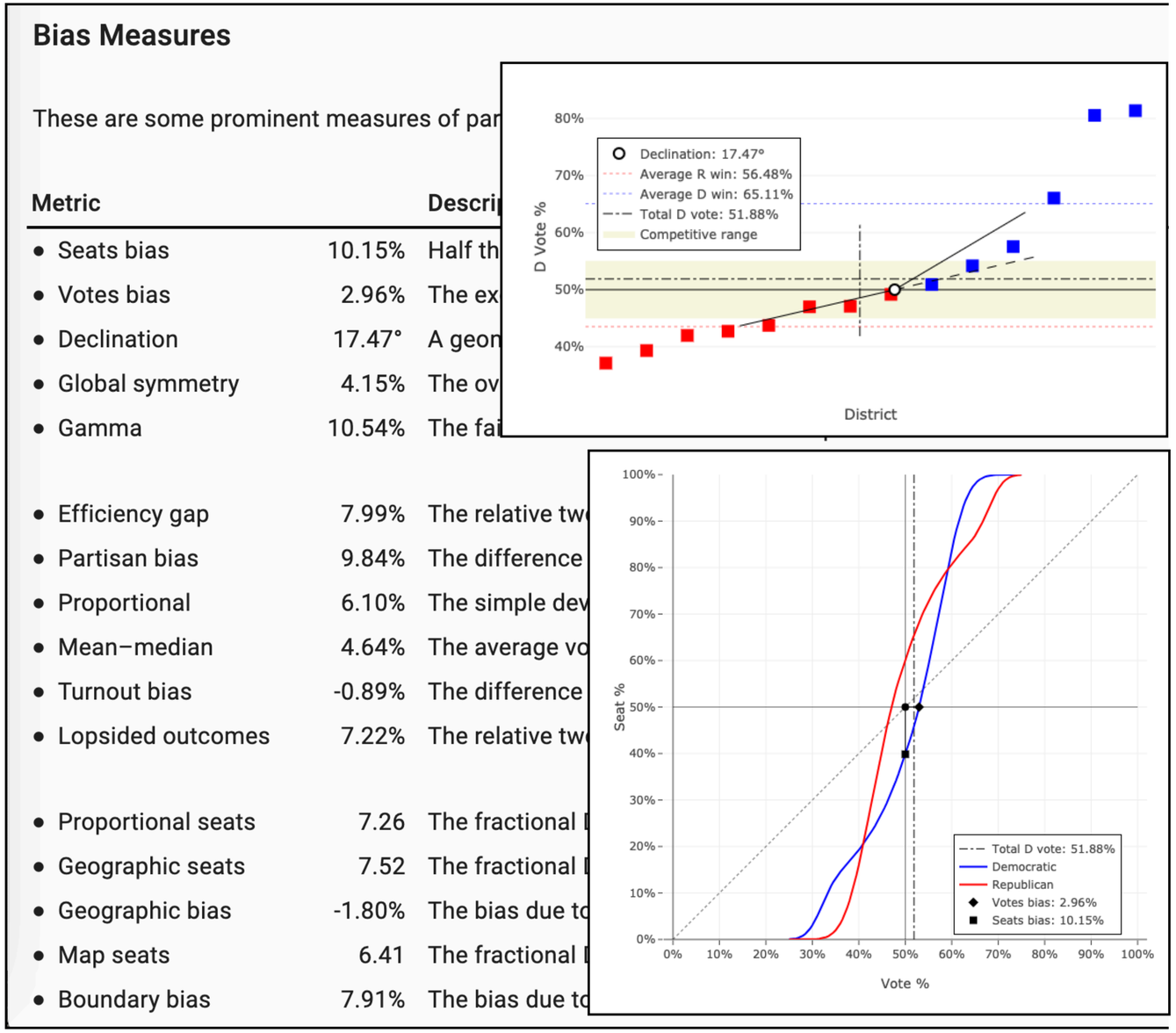


"Comparing Maps" (https://bit.ly/2Utupgs)

Advanced tab

Intended for experts

- Rank-vote graph
- Seats-votes curve
- Advance measures of bias & responsiveness
- Compactness by district
- Racially polarized voting & community splitting analyses



"Advanced Analytics" (https://bit.ly/3BCo3eb)

3 — Partisan Advantage

What is partisan advantage?

- Partisan advantage* is the difference between ideal and likely seat shares:
  - How *should* a statewide vote share get translated into seats?
  - How will district-by-district vote shares *likely* result in seats?
- Seats won are political currency.

- Around the likely two-party statewide vote share, Democratic by convention

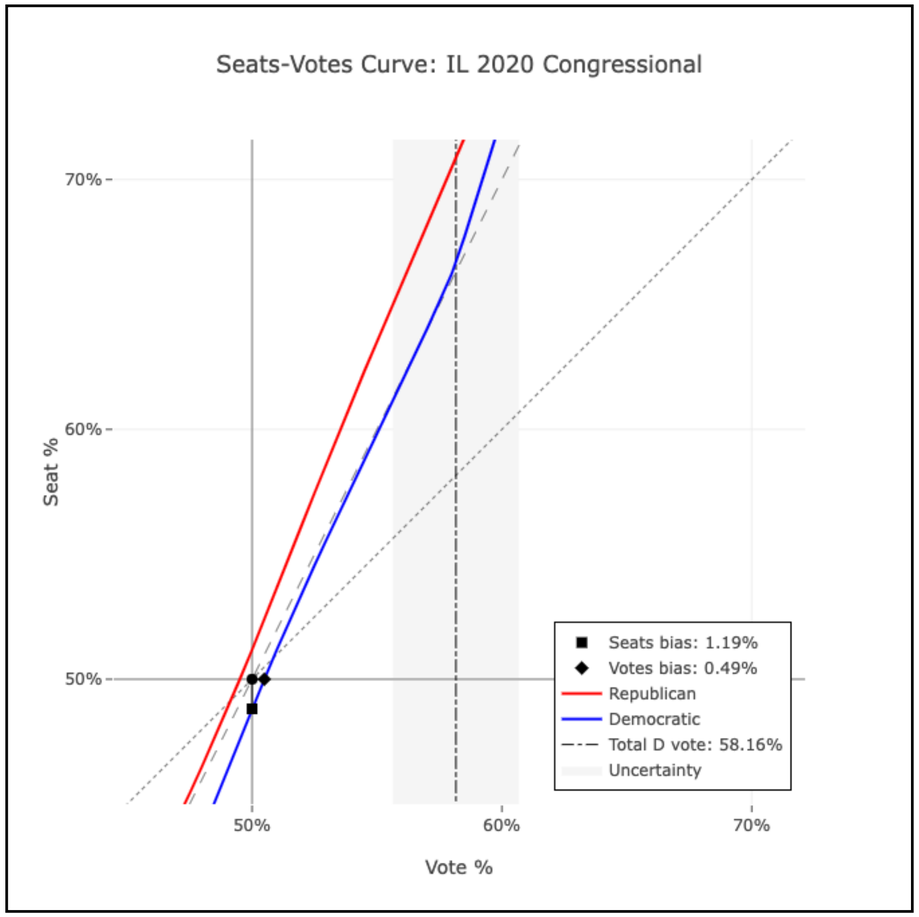
* Using “partisan advantage” instead of the overloaded terms “bias” and “partisan bias.”

Metrics in DRA

- Declination (δ), lopsided outcomes, and mean–median difference
  - These measure asymmetry (“packing”), a gerrymandering *technique.*
- Seats bias (α_s), votes bias (α_v), partisan bias (β), and global symmetry
  - These are unreliable in unbalanced states, because they aren’t “local.”
- Proportionality, efficiency gap, and gamma (γ) <= Pick one
  - These are reliable everywhere and use different ideal winner’s bonuses (R).

“Advanced Measures of Bias & Responsiveness” (https://bit.ly/2ZlqVfl)

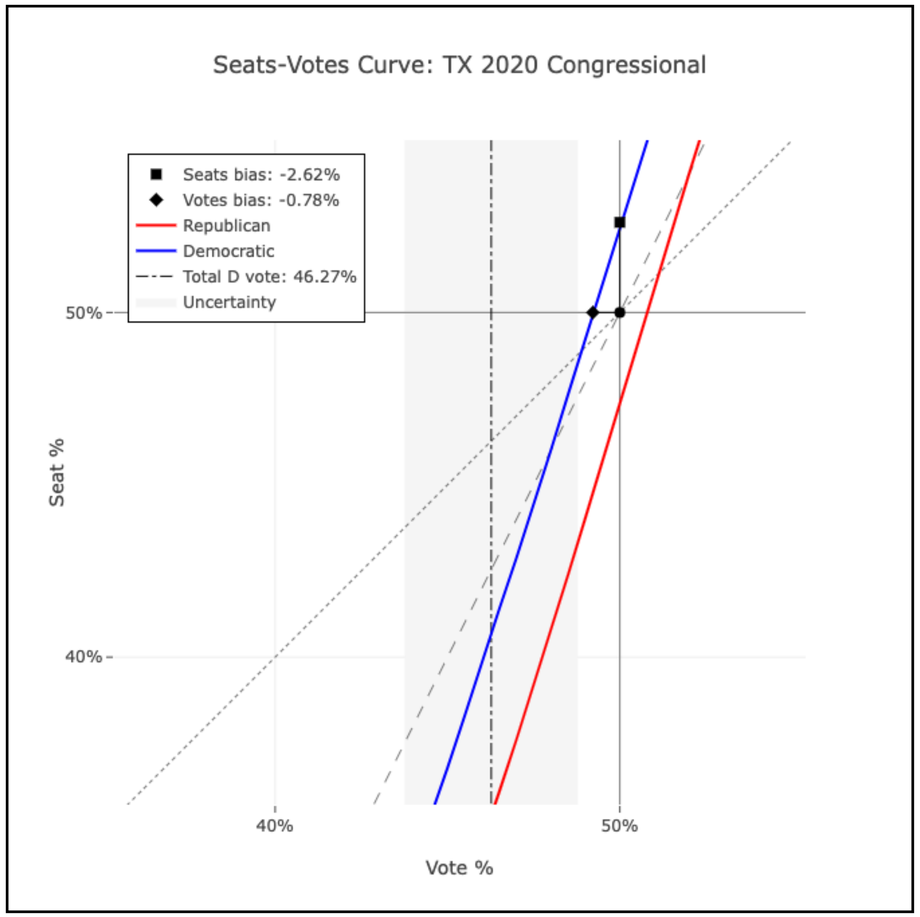
IL 2020 Congressional map



- (+) = R bias, (–) = D bias
- Seats bias: 1.2%
  Votes bias: 0.5%
  Partisan bias: 2.1%
  Global symmetry: 1.4%
- Proportionality = -11.4%
  Efficiency gap = -2.8%

Map: https://bit.ly/3vlnVy2

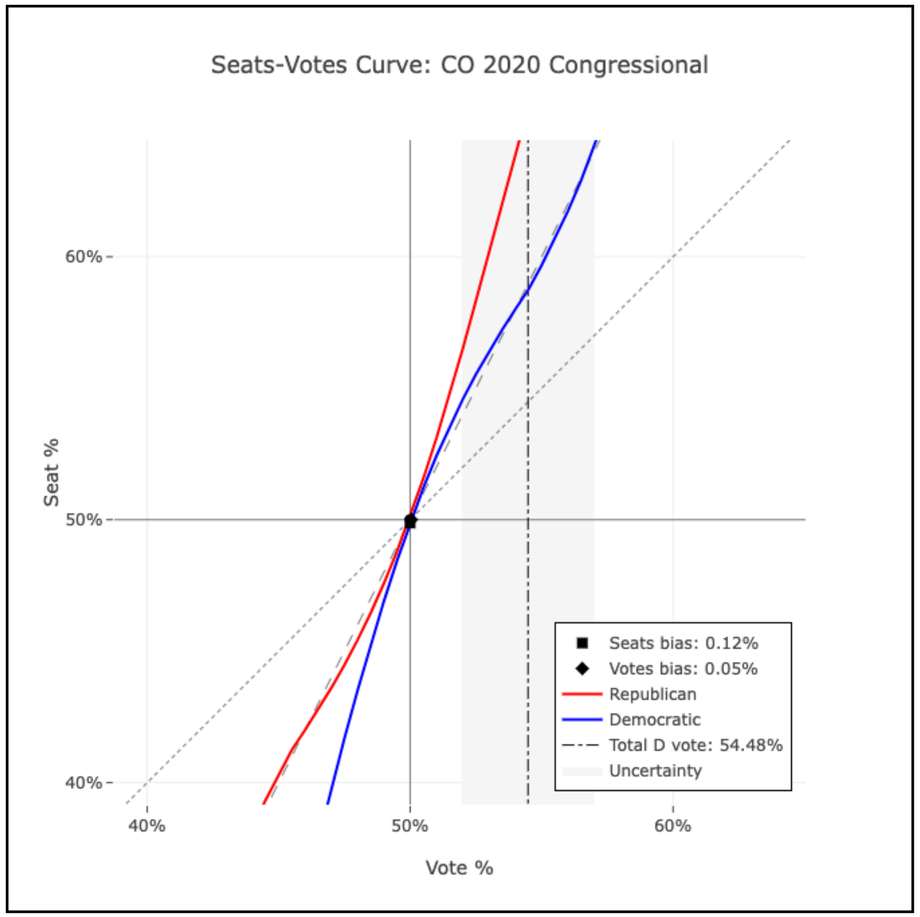
TX 2020 Congressional map



- Proportionality = 6.5%
  Efficiency gap = 1.8%

Map: https://bit.ly/3j8RIoM

CO 2020 Congressional map



- Proportionality = -4.2%
  Efficiency gap = 0.2%
- Overall responsiveness or winner's bonus (R) = 1.95
- When $1 \leq R \leq 2$, the map is <u>not</u> biased *wrto the efficiency gap ideal*

Map: https://bit.ly/3aMyGjE

Questions?

Email training@davesredistricting.org if you want to join a session.

DRA 2020

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