Scores (Metrics)

These are the metrics ("scores") calculated for a plan, when you score it using `analyze_plan()`. They are grouped below in the order that they appear in the scorecard dictionary.

General

- **D** – The number of districts.
- **C** – The number of counties.
- **population_deviation** – The population deviation of the plan.
- **estimated_vote_pct** – The Democratic two-party vote share.

Partisan Bias

The measures of partisan bias (in this section) and responsiveness (in the next section) are described in some detail in Advanced Measures of Bias & Responsiveness. Many use fractional seat probabilities.

- **pr_deviation** – The deviation from pr_seats. Smaller is better, and zero is perfect.
- **pr_seats** – The integral number of seats closest to proportional representation.
- **pr_pct** – pr_seats as a percentage of the number of districts.
- **estimated_seats** – The estimated number of fractional Democratic seats.
- **estimated_seat_pct** – estimated_seats as a percentage of the number of districts.
- **fptp_seats** – The estimated number of Democratic seats using "first past the post" (FPTP), all-or-nothing accounting.
- **disproportionality** – estimated_vote_pct minus estimated_seat_pct.
- **efficiency_gap** – The efficiency gap. Smaller absolute value is better. Positive values favor Republicans; negative values favor Democrats.
- **gamma** – A new measure of bias that combines seats and responsiveness.
- **seats_bias** (α_s) – The seats bias at 50% Democratic vote share.

- **votes_bias** (α_v) – The votes bias at 50% Democratic vote share.
- **geometric_seats_bias** (β) – The seats bias at the statewide Democratic vote share, not 50% (aka "partisan bias").
- **global_symmetry** (GS) – A combination of seats and votes bias.
- **declination** (δ) – The declination angle (in degrees), calculated using fractional seats and votes. Smaller is better.
- **mean_median_statewide** – The statewide Democratic two-party vote share minus the median Democratic two-party district vote share.
- **mean_median_average_district** – The mean Democratic two-party district vote share minus the median Democratic two-party district vote share.
- **turnout_bias** (TO) – The difference between the statewide Democratic vote share and the average their average district vote share.
- **lopsided_outcomes** (LO) – The difference between the average two-party vote shares for the Democratic and Republican wins.

Competitiveness & Responsiveness

- **competitive_districts** – The estimated number of competitive districts, using fractional seat probabilities. Bigger is better.
- **competitive_district_pct** – competitive_districts as a percentage of the number of districts (D).
- **average_margin** – The average margin of victory. Smaller is better.
- **responsiveness** (ρ) – The slope of the seats-votes curve at the statewide Democratic vote share.
- **responsive_districts** – The likely number of responsive districts, using fractional seat probabilities.
- **responsive_district_pct** – responsive_districts as a percentage of the number of districts (D).
- **overall_responsiveness** (R) – An overall measure of responsiveness which you can think of as a winner's bonus.
- **avg_dem_win_pct** – The average Democratic two-party vote share in districts won by Democrats.
- **avg_rep_win_pct** – The average Republican two-party vote share in districts won by Republicans.

Opportunity for Minority Representation

- **opportunity_districts** – The estimated number of single race or ethnicity minority opportunity districts, using fractional seat probabilities (and DRA's method).
- **proportional_opportunities** – The proportional number of single race or ethnicity minority opportunity districts, based on statewide VAP.
- **coalition_districts** – The estimated number of all-minorities-together coalition districts, using fractional seat probabilities (and DRA's method).
- **proportional_coalitions** – The proportional number of all-minorities-together coalition districts, based on statewide VAP.
- **alt_opportunity_districts** – The estimated number of single race or ethnicity minority opportunity districts, using fractional seat probabilities. Unlike opportunity_districts, this "alt" metric means does not clip below the 37% threshold (like DRA does). The results are more continuous.
- **alt_coalition_districts** – The estimated number of all-minorities-together coalition districts, using fractional seat probabilities. Unlike coalition_districts, this "alt" metric does not clip below the 37% threshold (like DRA does). The results are more continuous.

Compactness

- **reock** – The average Reock measure of compactnes for the districts. Bigger is better.
- **polsby_popper** – The average Polsby-Popper measure of compactness for the districts. Bigger is better.
- **cut_score** – The number of edges between nodes (precincts) in the contiguity graph that are cut (cross district boundaries). A measure of compactness using discrete geometry. Smaller is better.
- **spanning_tree_score** – The spanning tree scrore. Another measure of compactness using discrete geometry. Bigger is better.
- **population_compactness** – The population compactness of the map. Lower is more *energy* compact. Smaller is better.

County-District Splitting

The county and district splitting measures are described in Measuring County & District Splitting.

- **county_splitting** – A measure of the degree of county splitting. Smaller is better, and 1.0 (no splitting) is the best.
- **district_splitting** – A measure of the degree of district splitting. Smaller is better, and 1.0 (no splitting) is the best.
- **counties_split** – The number of counties split across districts. Smaller is better.
- **county_splits** – The number of *times* counties are split, e.g, a county may be split more than once. Smaller is better.

Dave's Redistricting Ratings

- **proportionality** – DRA's propoprtionality rating. Integers [0-100], where bigger is better.
- **competitiveness** – DRA's competitiveness rating. Integers [0-100], where bigger is better.
- **minority** – DRA's minority opportunity rating. Integers [0-100], where bigger is better.
- **compactness** – DRA's compactness rating. Integers [0-100], where bigger is better.
- **splitting** – DRA's county-district splitting rating. Integers [0-100], where bigger is better.
- **minority_alt** – A modified version of DRA's minority opportunity rating that uses `alt_opportunity_districts` and `alt_coalition_districts` (i.e., does not clip below the 37% threshold) making the results more continuous.

By District

- **by_district** – `reock`, `polsby_popper`, `cut_score`, and `spanning_tree_score` by district (with zero-based indexing, i.e., district 1 is the first element [0] in the list).