Gerrymandering Metrics

```
#Set Up
library(tidyverse)
```

```
── Attaching core tidyverse packages ──────────────────────── tidyverse 2.0.0
──
✔ dplyr     1.1.4     ✔ readr     2.1.5
✔ forcats   1.0.1     ✔ stringr   1.5.2
✔ ggplot2   4.0.0     ✔ tibble    3.3.0
✔ lubridate 1.9.4     ✔ tidyr     1.3.1
✔ purrr     1.1.0
── Conflicts ────────────────────────────────────────── tidyverse_conflicts()
──
✖ dplyr::filter() masks stats::filter()
✖ dplyr::lag()    masks stats::lag()
ℹ Use the conflicted package (<http://conflicted.r-lib.org/>) to force all
conflicts to become errors
```

```
precinct_data <- read_csv("data/g24_sov_by_g24_svprec_clean.csv")
```

```
Rows: 51123 Columns: 76
── Column specification
────────────────────────────────────────────────────────
Delimiter: ","
chr (49): fips, svprec, svprec_key, election, geo_type, assaip01,
assdem01, ...
dbl (27): county, addist, cddist, sddist, bedist, totreg, demreg, repreg,
ai...

ℹ Use `spec()` to retrieve the full column specification for this data.
ℹ Specify the column types or set `show_col_types = FALSE` to quiet this
message.
```

```
precinct_congress <- precinct_data |>
    filter(!str_detect(svprec, "TOT")) |>
    filter(cddist > 0)
```

2024 Election Results and the 2024 District Map

```
wasted_votes <- function(votes_a, votes_b) {
    total <- votes_a + votes_b
    needed <- floor(total/2) + 1
    ifelse(votes_a > votes_b, votes_a - needed, votes_a)
}
district_results <- precinct_congress |>
    group_by(cddist) |>
    summarize(dem_total = sum(demvote, na.rm = TRUE), rep_total = sum(repvote,
na.rm = TRUE), two_party_total = dem_total + rep_total, .groups = "drop")

two_party_district <- district_results |>
    filter(dem_total > 0, rep_total > 0)

two_party_district <- two_party_district |>
    mutate(wasted_dem = wasted_votes(votes_a = dem_total, votes_b =
rep_total), wasted_rep = wasted_votes(votes_a = rep_total, votes_b =
dem_total))

total_wasted_dem <- sum(two_party_district$wasted_dem)
total_wasted_rep <- sum(two_party_district$wasted_rep)
total_two_party_votes <- sum(two_party_district$two_party_total)

efficiency_gap <- (total_wasted_rep - total_wasted_dem) /
total_two_party_votes
efficiency_gap
```

```
[1] NaN
```

2024 Election Results and the proposed 2025 District Map

```
ab604_results <- read_csv("data/ab604_cd_results.csv")
```

```
Rows: 52 Columns: 3
── Column specification
────────────────────────────────────────────────────────
Delimiter: ","
chr (1): district
dbl (2): uspdem01, usprep01

ℹ Use `spec()` to retrieve the full column specification for this data.
ℹ Specify the column types or set `show_col_types = FALSE` to quiet this
message.
```

```
ab604_district_results <- ab604_results |>
    rename(cddist = district, dem_total = uspdem01, rep_total = usprep01) |>
```

```
    mutate(two_party_total = dem_total + rep_total)

wasted_votes <- function(votes_a, votes_b) {
    total  <- votes_a + votes_b
    needed <- floor(total / 2) + 1
    ifelse(votes_a > votes_b, votes_a - needed, votes_a)
}
two_party_district <- ab604_district_results |>
    filter(dem_total > 0, rep_total > 0)

two_party_district <- two_party_district |>
    mutate(wasted_dem = wasted_votes(votes_a = dem_total, votes_b =
rep_total), wasted_rep = wasted_votes(votes_a = rep_total, votes_b =
dem_total))

total_wasted_dem <- sum(two_party_district$wasted_dem)
total_wasted_rep <- sum(two_party_district$wasted_rep)
total_two_party_votes <- sum(two_party_district$two_party_total)

efficiency_gap <- (total_wasted_rep - total_wasted_dem) /
total_two_party_votes
efficiency_gap
```

```
[1] 0.2363114
```