Different Shades of Vote

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```
getwd()
```

```
## [1] "D:/CEU_MA_EDP/Fall2025/DataScience1/MiniProject"
```

```
setwd(
  "D:/CEU_MA_EDP/Fall2025/DataScience1/MiniProject"
)
```

```
pacman::p_load(tidyverse, sf, giscoR, readr, tidyr, ggplot2, viridis)
```

```
#  country <- giscoR::gisco_get_countries(
#   country = "DE", resolution = "1", epsg = "3035"
#  )

nuts3_de <- giscoR::gisco_get_nuts(
  country = "DE",
  resolution = "3",
  epsg = "3035",
  year = "2016",
  update_cache = TRUE
)

plot(sf::st_geometry(nuts3_de))
```

```
votes <- read_csv("eu_ned_ep.csv")
```

```
## Rows: 68253 Columns: 15
## ── Column specification ────────────────────────────────────────────────────────
## Delimiter: ","
## chr (8): country, country_code, nuts2016, regionname, type, party_abbreviati...
## dbl (7): nutslevel, year, partyfacts_id, partyvote, electorate, totalvote, v...
##
## 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.
```

```
votes_de <- subset(votes, country_code == "DE" &
                     year == 2019 & nutslevel == 3)

votes_df <- votes_de |>
  dplyr::mutate(vote_share = partyvote / totalvote * 100) |>
  dplyr::mutate(party = party_abbreviation) |>
  dplyr::select(nuts2016, party, vote_share)

summary(votes_df$party)
```

```
##    Length     Class      Mode
##      4729 character character
```

```
votes_df$party <- as.factor(votes_df$party)
summary(votes_df$party)
```

```
##              AFD              BIG               BP              CDU
##              401                5               38              401
##              CSU        DIE LINKE       DIE PARTEI           DIEM25
##              401              401              401                2
##          FAMILIE              FDP     FREIE WAHLER            GRUNE
##               83              401              401              401
##              NPD              ODP            OTHER          PIRATEN
##               22              120              401               15
##              SPD TIERSCHUTZPARTEI             VOLT
##              401              401               33
```

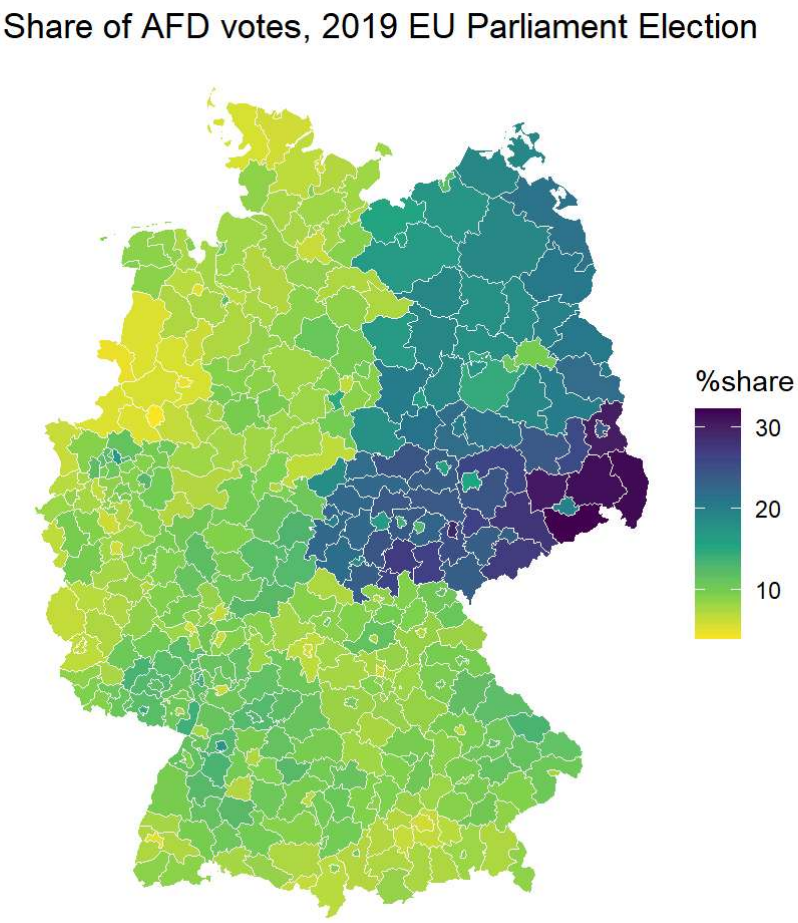
```
levels(votes_df$party)
```

```
##  [1] "AFD"              "BIG"              "BP"               "CDU"
##  [5] "CSU"              "DIE LINKE"        "DIE PARTEI"       "DIEM25"
##  [9] "FAMILIE"          "FDP"              "FREIE WAHLER"     "GRUNE"
## [13] "NPD"              "ODP"              "OTHER"            "PIRATEN"
## [17] "SPD"              "TIERSCHUTZPARTEI" "VOLT"
```

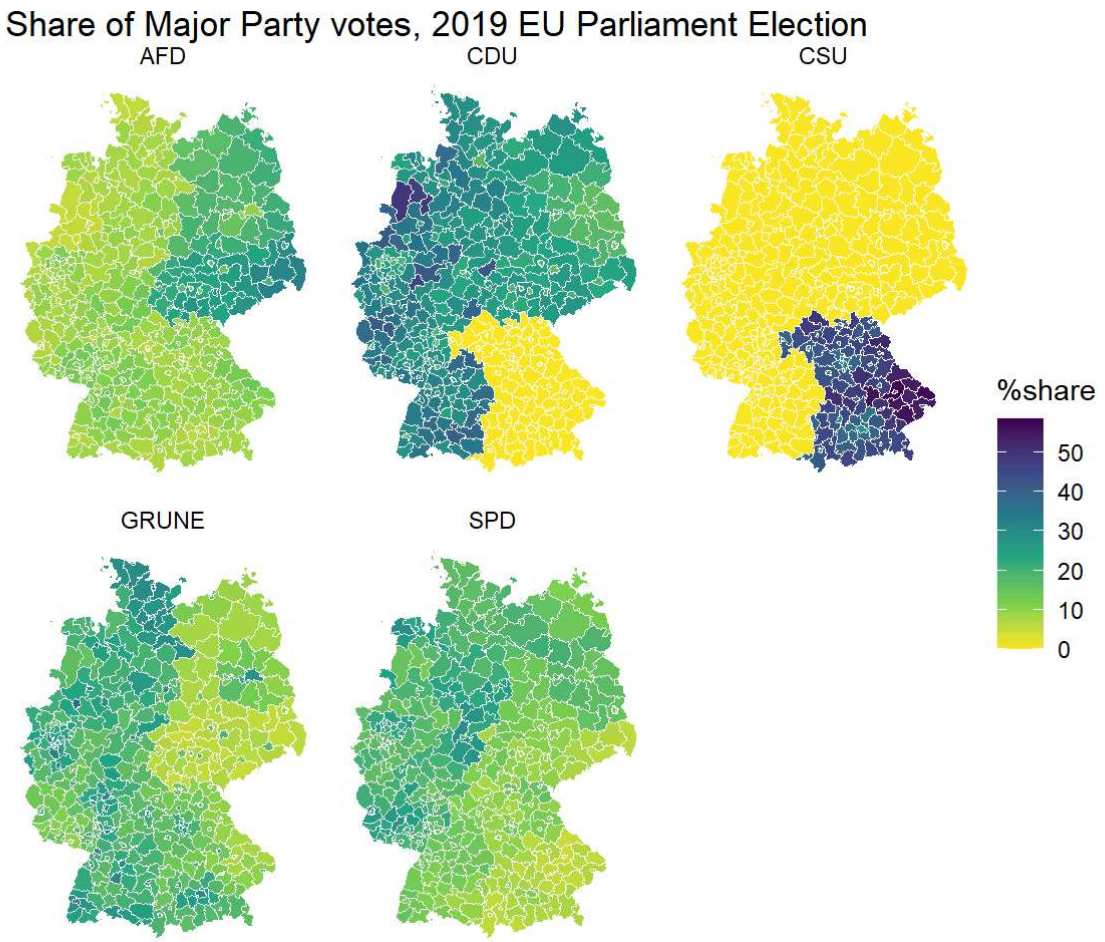
```
map_de <- dplyr::left_join(
  nuts3_de, votes_df, by = c("NUTS_ID" = "nuts2016")
)

class(map_de)
```

```
## [1] "sf"         "data.frame"
```

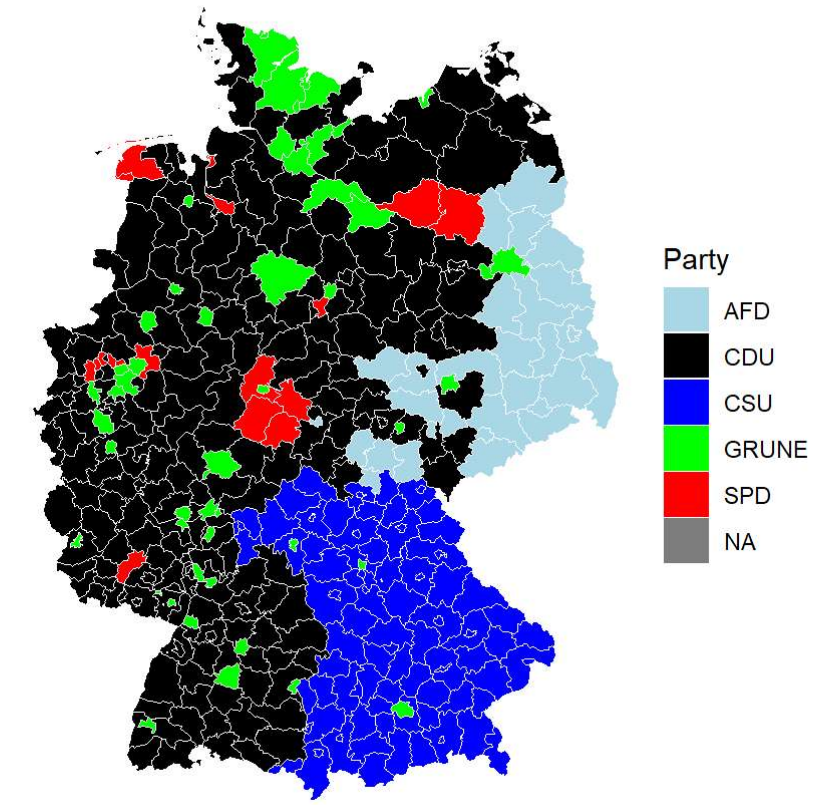
```
# Map 1: AFD share of votes
map_afd <- ggplot() +
  geom_sf(
    data = subset(map_de, party == "AFD"), aes(fill = vote_share),
    color = "white", linewidth = .1
  ) +
  scale_fill_viridis_c(
    option = "viridis", direction = -1,
    name = "%share", na.value = "grey70"
  )+
  labs(title = "Share of AFD votes, 2019 EU Parliament Election") +
  theme_void()

plot(map_afd)
```




```
# Map 2: Panel Map
major_parties <- c("CDU", "CSU", "GRUNE", "AFD", "SPD")
map_major_parties <- subset(map_de, party %in% major_parties)

map_major <- ggplot() +
  geom_sf(
    data = map_major_parties, aes(fill = vote_share),
    color = "white", linewidth = .1
  ) +
  scale_fill_viridis_c(
    option = "viridis", direction = -1,
    name = "%share", na.value = "grey70"
  )+
  facet_wrap(~ party, scales = "fixed") +
  labs(title = "Share of Major Party votes, 2019 EU Parliament Election") +
  theme_void()

plot(map_major)
```


Share of Major Party votes, 2019 EU Parliament Election
AFD
CDU
CSU
GRUNE
SPD
%share
50
40
30
20
10
0

```
# Map 3: Winner map
map_winners <- map_de |>
  dplyr::group_by(NUTS_ID) |>
  dplyr::slice_max(
    order_by = vote_share, n = 1, with_ties = FALSE
  ) |>
  dplyr::ungroup()

map_winner <- ggplot() +
  geom_sf(
    data = map_winners, aes(fill = party),
    color = "white", linewidth = .1
  ) +
  scale_fill_manual(
    name = "Party",
    values = c(
      "AFD" = "#ABD9E9", "CDU" = "black",
      "CSU" = "blue", "SPD" = "red", "GRUNE" = "green"
    ), drop = TRUE
  ) +
  labs(title = "2019 EU Parliament Election - Winning Party",
       subtitle = "NUTS-3 regions"
  ) +
  theme_void()

plot(map_winner)
```


2019 EU Parliament Election - Winning Party
NUTS-3 regions
Party
AFD
CDU
CSU
GRUNE
SPD
NA