# Lab 03

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## Packages

```
library(tidyverse)
library(sf)
```

## Data

```
fl_votes <- st_read("data/fl_votes.shp", quiet = TRUE)
fl_votes %>%
  slice(1:6)
```

```
## Simple feature collection with 6 features and 5 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XY
## Bounding box:  xmin: -85.99989 ymin: 25.95675 xmax: -80.01528 ymax: 30.58427
## Geodetic CRS:  NAD83
##     county  rep16  dem16  rep20  dem20                       geometry
## 1  Alachua  46834  75820  50972  89704 MULTIPOLYGON (((-82.37389 2...
## 2    Baker  10294   2112  11911   2037 MULTIPOLYGON (((-82.10107 3...
## 3      Bay  62194  21797  66097  25614 MULTIPOLYGON (((-85.65968 3...
## 4 Bradford   8913   2924  10334   3160 MULTIPOLYGON (((-82.274 29....
## 5  Brevard 181848 119679 207883 148549 MULTIPOLYGON (((-80.49977 2...
## 6  Broward 260951 553320 333409 618752 MULTIPOLYGON (((-80.29693 2...
```

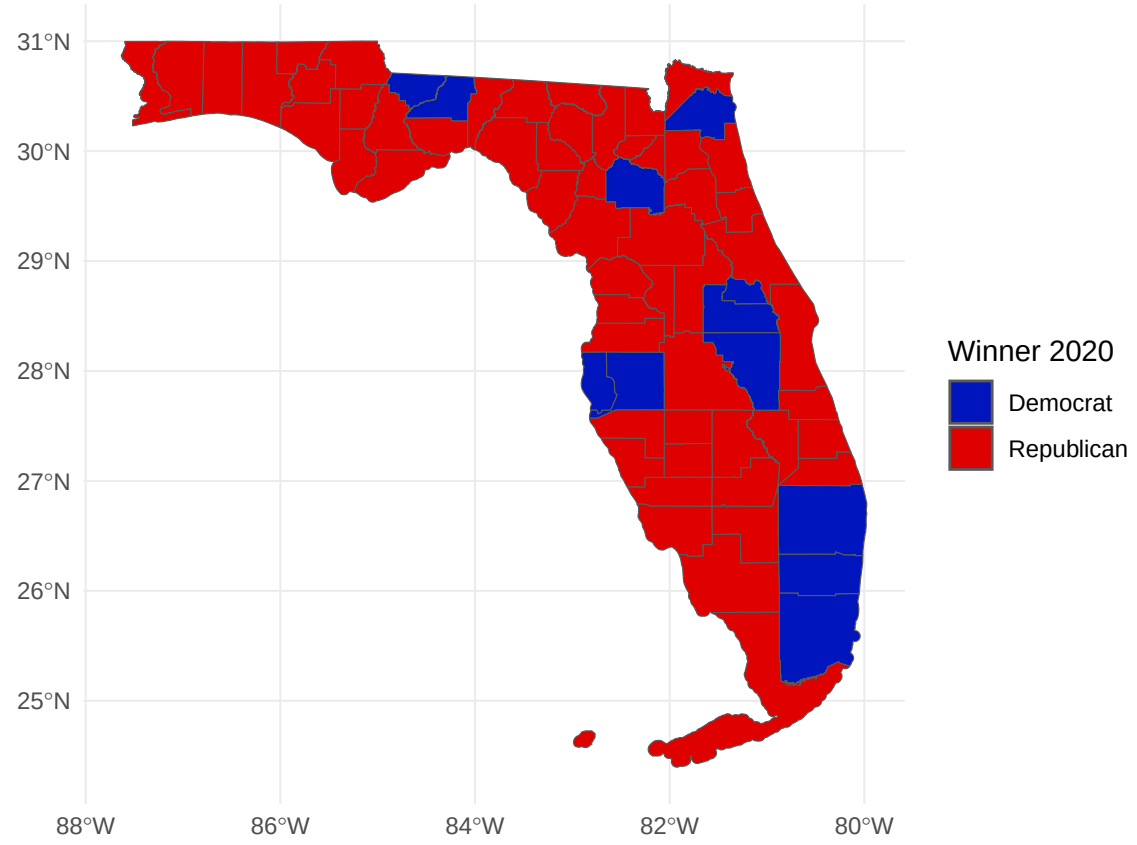
## Exercise 1

```
fl_votes_sf <- st_as_sf(fl_votes, coords = c("longitude", "latitude"), crs = 4326)

fl_votes_sf <- fl_votes_sf %>%
  mutate(winner20 = if_else(dem20 > rep20, "Democrat",
                            if_else(dem20 < rep20, "Republican", "Tie")))
```

## Exercise 2

```
ggplot() +
  geom_sf(data = fl_votes_sf, aes(fill = winner20)) +
  scale_fill_manual(values = c("Democrat" = "#0015BC", "Republican" = "#DE0100", "Tie" = "gray"),
                    na.value = "gray") +
  labs(fill = "Winner 2020") +
  theme_minimal()
```



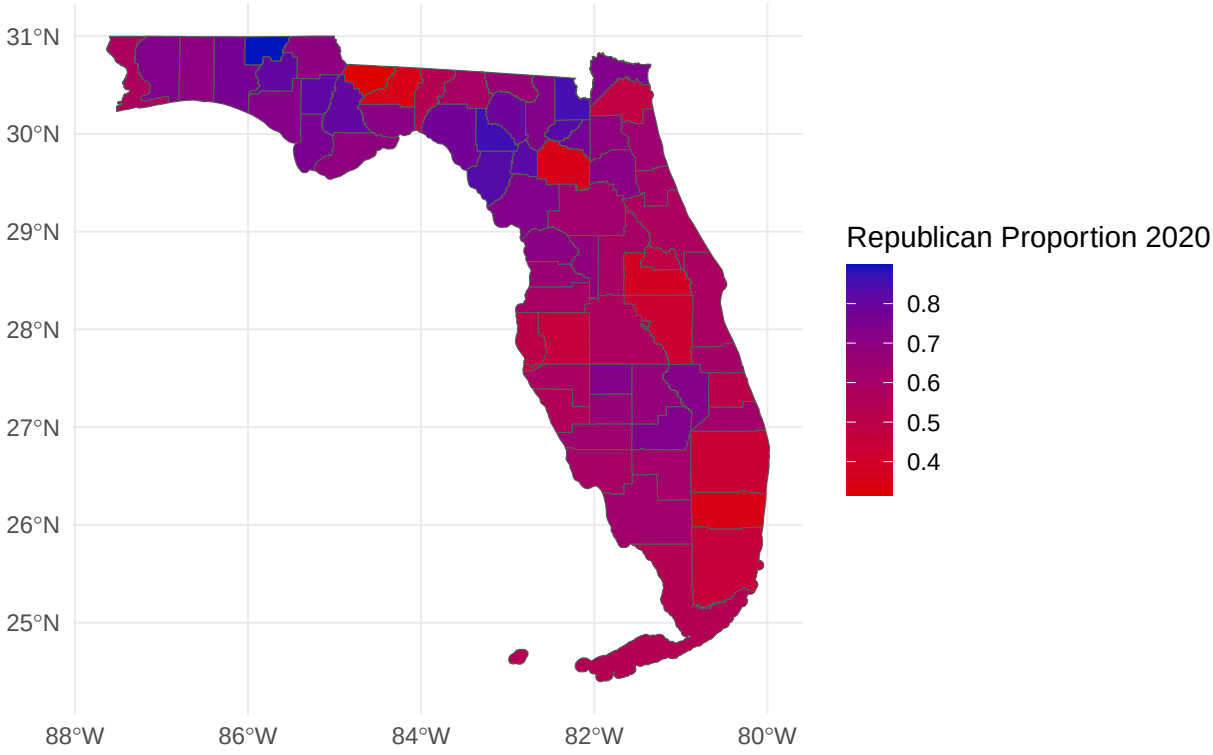

## Exercise #3

```
fl_votes_sf <- fl_votes_sf %>%
  mutate(prop_rep16 = rep16 / (rep16 + dem16),
         prop_rep20 = rep20 / (rep20 + dem20))
```

## Exercise 4

```
ggplot() +
  geom_sf(data = fl_votes_sf, aes(fill = prop_rep20)) +
```

```
  scale_fill_gradient(low = "#DE0100", high = "#0015BC",
                      na.value = "gray") +
  labs(fill = "Republican Proportion 2020") +
  theme_minimal()
```

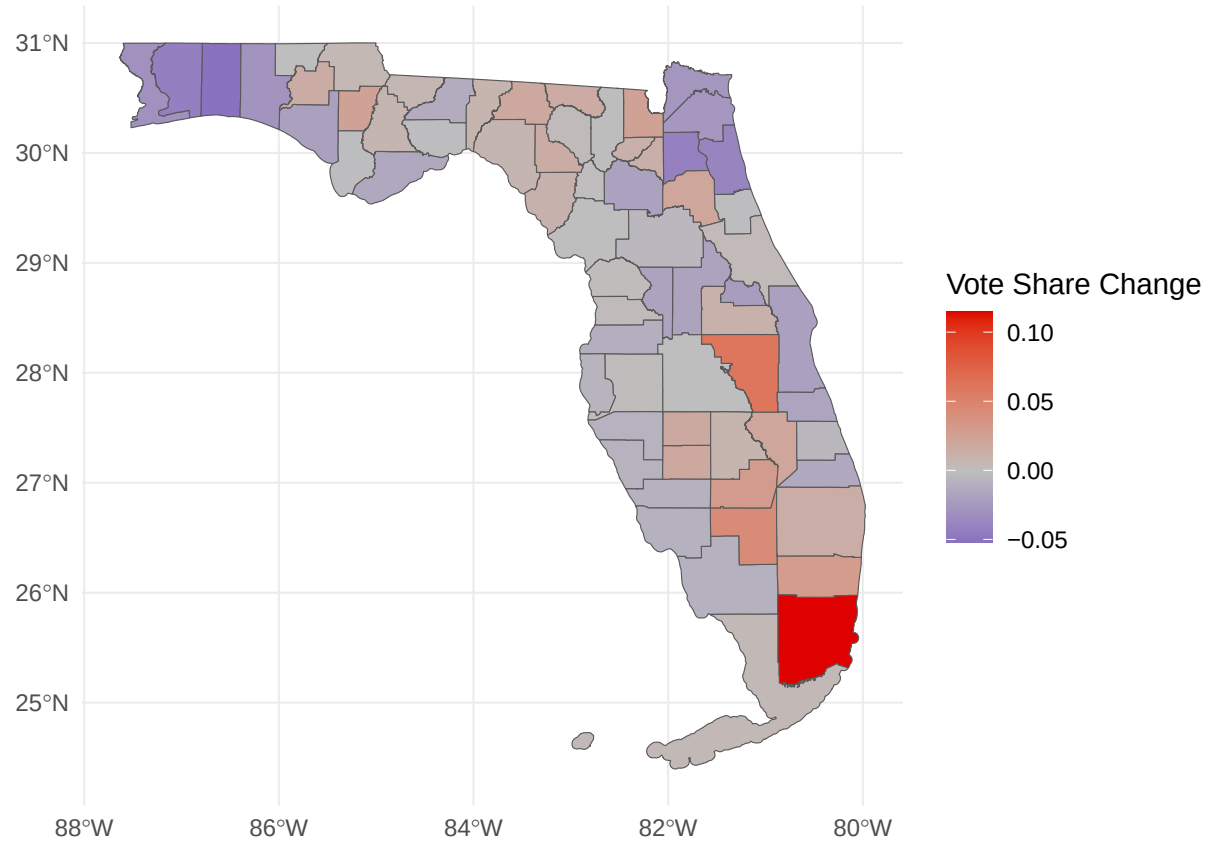



## Exercise 5

```
fl_votes_sf <- fl_votes_sf %>%
  mutate(diff_rep = prop_rep20 - prop_rep16)
```

## Exercise 6

```
ggplot() +
  geom_sf(data = fl_votes_sf, aes(fill = diff_rep)) +
  scale_fill_gradient2(low = "#0015BC", mid = "gray", high = "#DE0100",
                       midpoint = 0, na.value = "gray",
                       guide = guide_colorbar(title = "Vote Share Change")) +
  labs(fill = "Vote Share Change") +
  theme_minimal()
```




## Exercise 7

The visualizations developed provide insights into the 2016 and 2020 Presidential elections in Florida. The first plot (Exercise 2) shows the winner of each county in the 2020 election, with Democrat, Republican, and Tie categories represented by different colors. The second plot (Exercise 4) displays the proportion of the two-party vote cast for the Republican candidate in 2020, with a gradient color scheme from red to blue. The third plot (Exercise 6) depicts the change in Republican vote share between 2016 and 2020, with a color gradient from blue to red.

Limitations of these visualizations include: 1. The visualizations focus only on Republican and Democratic candidates, without considering other parties or independent candidates. 2. The color schemes chosen for the plots are subjective and may not be universally interpretable. 3. The plots do not take into account the population differences between counties, which can impact the overall representation of results.