Lab03 Write-Up

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```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.0 --
```

```
## v ggplot2 3.3.3     v purrr   0.3.3
## v tibble  2.1.3     v dplyr   1.0.2
## v tidyr   1.1.2     v stringr 1.4.0
## v readr   1.3.1     v forcats 0.4.0
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(maps)
```

```
##
## Attaching package: 'maps'
```

```
## The following object is masked from 'package:purrr':
##
##     map
```

```
library(mapproj)
library(socviz)
library(ggthemes)
```

Load Data

```
county_level_2020 = read_csv("https://raw.githubusercontent.com/tonmcg/US_County_Level_Electio
```

```
## Parsed with column specification:
## cols(
##   state_name = col_character(),
##   county_fips = col_character(),
##   county_name = col_character(),
##   votes_gop = col_double(),
```

```
##   votes_dem = col_double(),
##   total_votes = col_double(),
##   diff = col_double(),
##   per_gop = col_double(),
##   per_dem = col_double(),
##   per_point_diff = col_double()
## )
```

```
state_level_2020 = county_level_2020 %>%
  group_by(state_name) %>%
  summarize(gop_votes = sum(votes_gop),
         dem_votes = sum(votes_dem),
         total_votes = sum(total_votes),
         diff = sum(diff)) %>%
  mutate(
    pct_gop = gop_votes/total_votes,
    pct_dem = dem_votes/total_votes,
  ) %>%
  ungroup()
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
state_level_2020
```

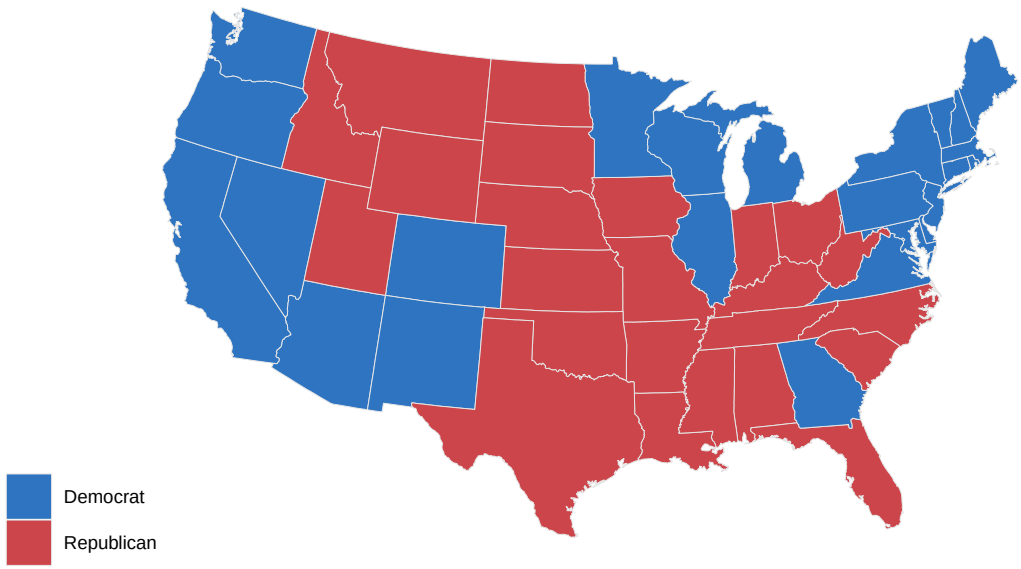
```
## # A tibble: 51 x 7
##    state_name           gop_votes dem_votes total_votes     diff pct_gop pct_dem
##    <chr>                    <dbl>     <dbl>       <dbl>    <dbl>   <dbl>   <dbl>
##  1 Alabama                1441168    849648     2323304   591520  0.620    0.366
##  2 Alaska                  189892    153405      391346    36487  0.485    0.392
##  3 Arizona                1661686   1672143     3387326   -10457  0.491    0.494
##  4 Arkansas                760647    423932     1219069   336715  0.624    0.348
##  5 California             6005961  11109764    17495906 -5103803  0.343    0.635
##  6 Colorado               1364607   1804352     3256953  -439745  0.419    0.554
##  7 Connecticut             715291   1080680     1824280  -365389  0.392    0.592
##  8 Delaware                200603    296268      504010   -95665  0.398    0.588
##  9 District of Columbia     18586    317323      344356  -298737  0.0540   0.921
## 10 Florida                5668731   5297045    11067456   371686  0.512    0.479
## # ... with 41 more rows
```

Part 1: Replicating 2016 maps using 2020 data

Replication 1

```
#load state geography data
us_states <- map_data("state")
```

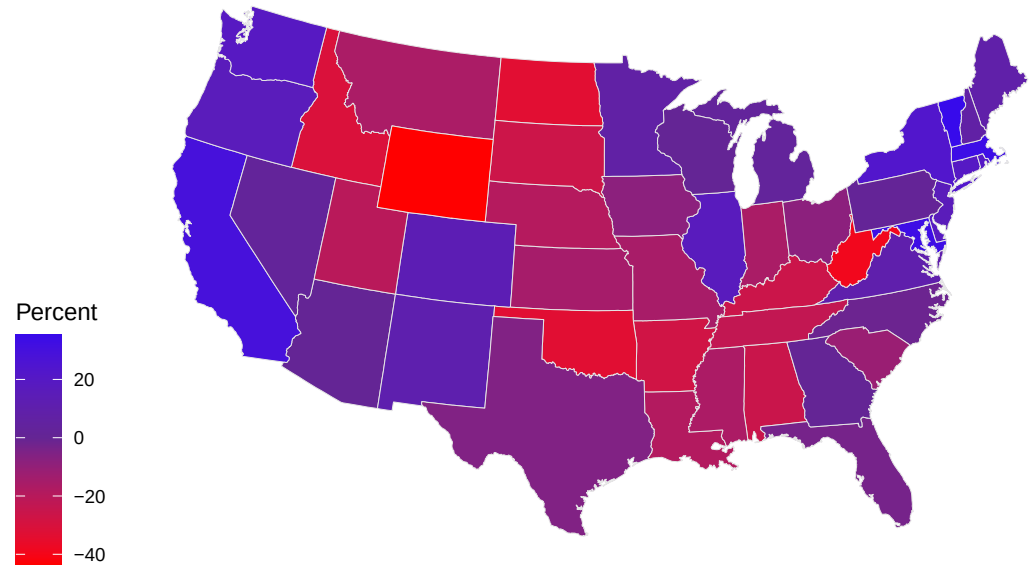
```r
#define colors for parties
party_colors <- c("#2E74C0", "#CB454A")

#add binary party variable
state_level_2020$party <- ifelse(state_level_2020$diff > 0, c("Republican"), c("Democrat"))

state_level_2020$region <- tolower(state_level_2020$state_name)
us_states_elec <- left_join(us_states, state_level_2020, by = "region")

p0 <- ggplot(data = us_states_elec,
             mapping = aes(x = long, y = lat,
                           group = group, fill = party))

p1 <- p0 + geom_polygon(color = "gray90", size = 0.1) +
  coord_map(projection = "albers", lat0 = 39, lat1 = 45)

p2 <- p1 + scale_fill_manual(values = party_colors) +
  labs(title = "2020 Election Results", fill = NULL)

p2 + theme_map()
```



Replication 2

```r
us_states_elec$d_points <- (us_states_elec$pct_dem - us_states_elec$pct_gop) * 100

p0 <- ggplot(data = subset(us_states_elec,
              region %nin% "district of columbia"),
             mapping = aes(x = long, y = lat,
```

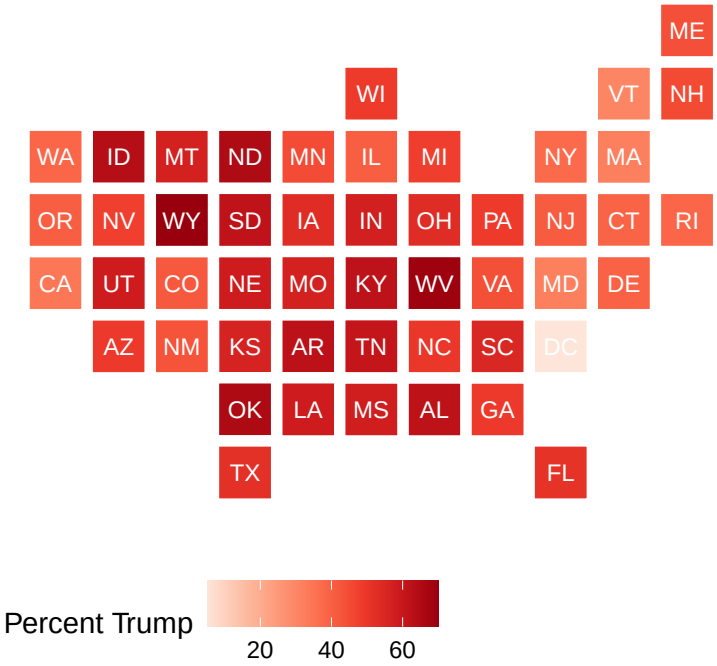
```
                          group = group, fill = d_points))

p1 <- p0 + geom_polygon(color = "gray90", size = 0.1) +
  coord_map(projection = "albers", lat0 = 39, lat1 = 45)

p2 <- p1 + scale_fill_gradient2(low = "red",
                                mid = scales::muted("purple"),
                                high = "blue") +
  labs(title = "Winning Margins")

p2 + theme_map() + labs(fill = "Percent")
```



Replication 3

```
library(statebins)
 statebins(state_data = us_states_elec,
           state_col = "state_name",
           value_col = "pct_gop*100",
           dark_label = "white",
           light_label = "white",
           palette = "Reds",
           direction = 1,
           font_size = 3) +
           labs(fill="Percent Trump")+
           theme_statebins()
```

```
## Warning in validate_states(state_data, state_col, merge.x): Removing duplicate
## state rows
```



Part 2: Option 1

```
p0 <- ggplot(data = us_states_elec,
             mapping = aes(x = long, y = lat,
                           group = group, fill = pct_dem * 100))

p1 <- p0 + geom_polygon(color = "gray90", size = 0.1) +
  coord_map(projection = "albers", lat0 = 39, lat1 = 45)

p2 <- p1 + scale_fill_gradient(low = "white", high = "#00AD45") +
  labs(title = "Biden Votes")

p2 + theme_map() + labs(fill = "Percent")
```

Biden Votes