Assignment 6

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3/6/2023

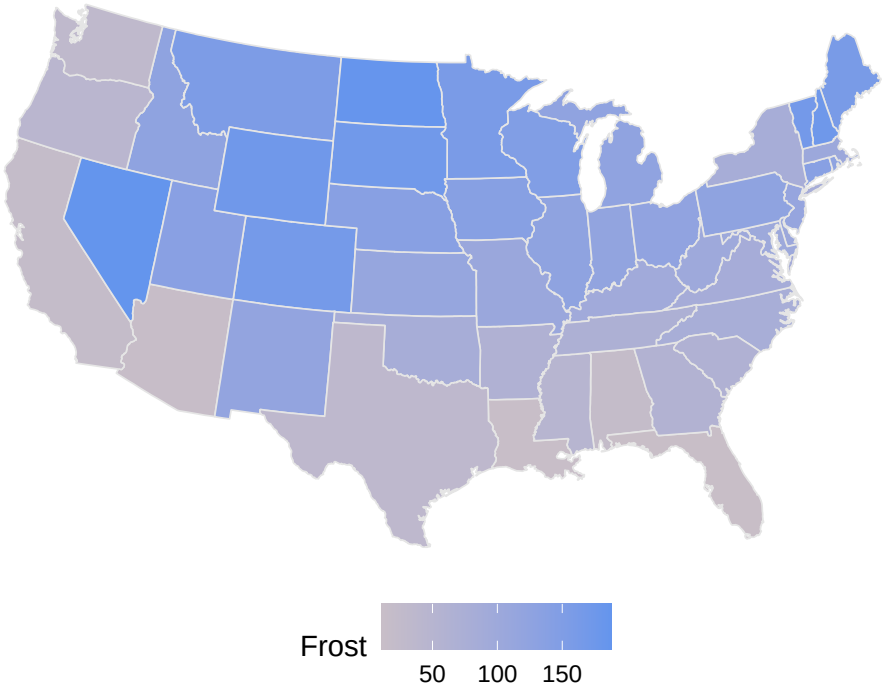
```
#load in necessary packages
library(dplyr)
library(dbplyr)
library(ggplot2)
library(maps)
library(mapproj)
```

```
#load in state data
data(state)
state_data <- as.data.frame(state.x77) |>
  mutate(region = tolower(state.name))
us_states <- map_data("state")
state_map <- left_join(us_states, state_data, by = "region")
```

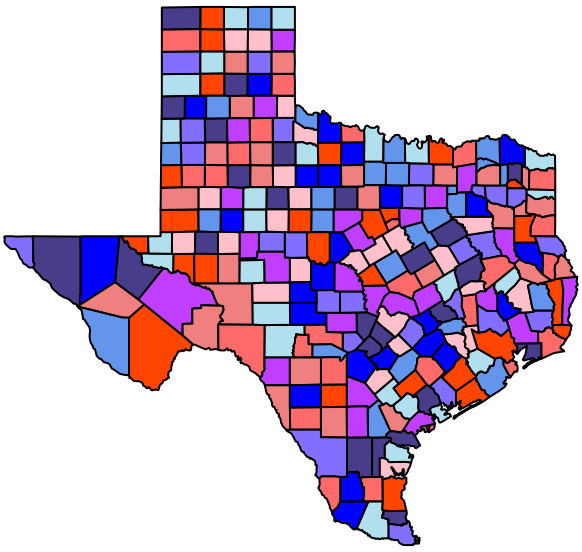
```
#group by state, then show number of days of frost via map
ggplot(state_map, aes(x = long, y = lat, group = group)) +
  geom_polygon(aes(fill = Frost), color = "grey90", size = 0.3) +
  coord_map(projection = "albers", lat0 = 39, lat1 = 45) +
  scale_fill_gradient2(mid = "lavenderblush3", high = "cornflowerblue") +
  theme_void() +
  theme(legend.position = "bottom") +
  labs(title = "Number of Days of Frost", subtitle = "Grouped by State")
```

Number of Days of Frost

Grouped by State

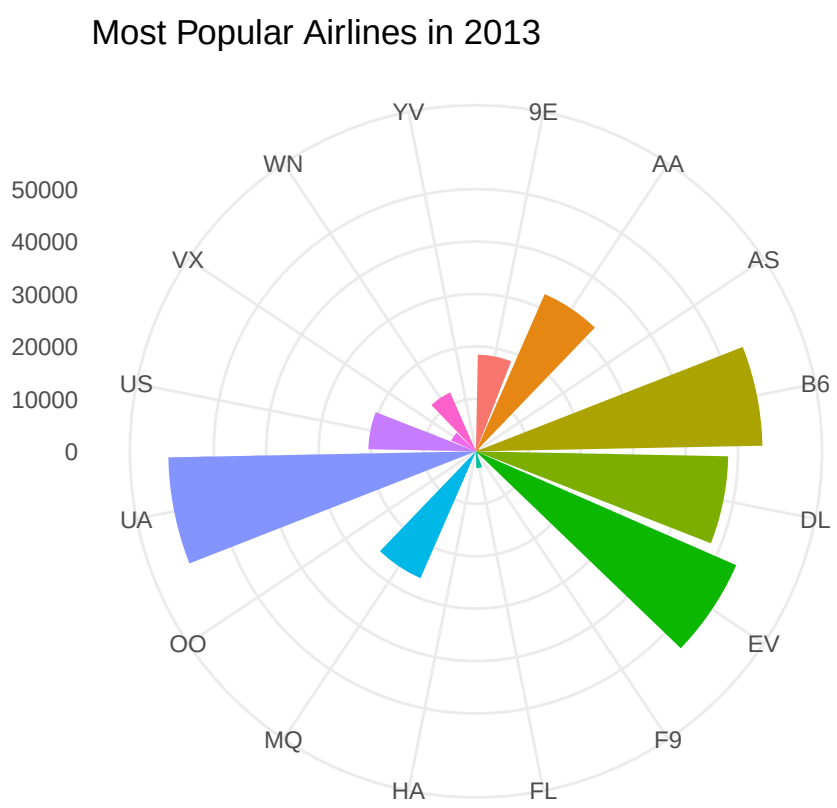



```
#show counties in Texas
map('county', 'texas', fill = TRUE, col = c("slateblue1", "orangered", "lightcoral",
"indianred1", "blue", "darkslateblue", "darkorchid1", "pink", "lightblue2", "cornflowerblue"))
```



```
#load in flight data
flights <- nycflights13::flights
```

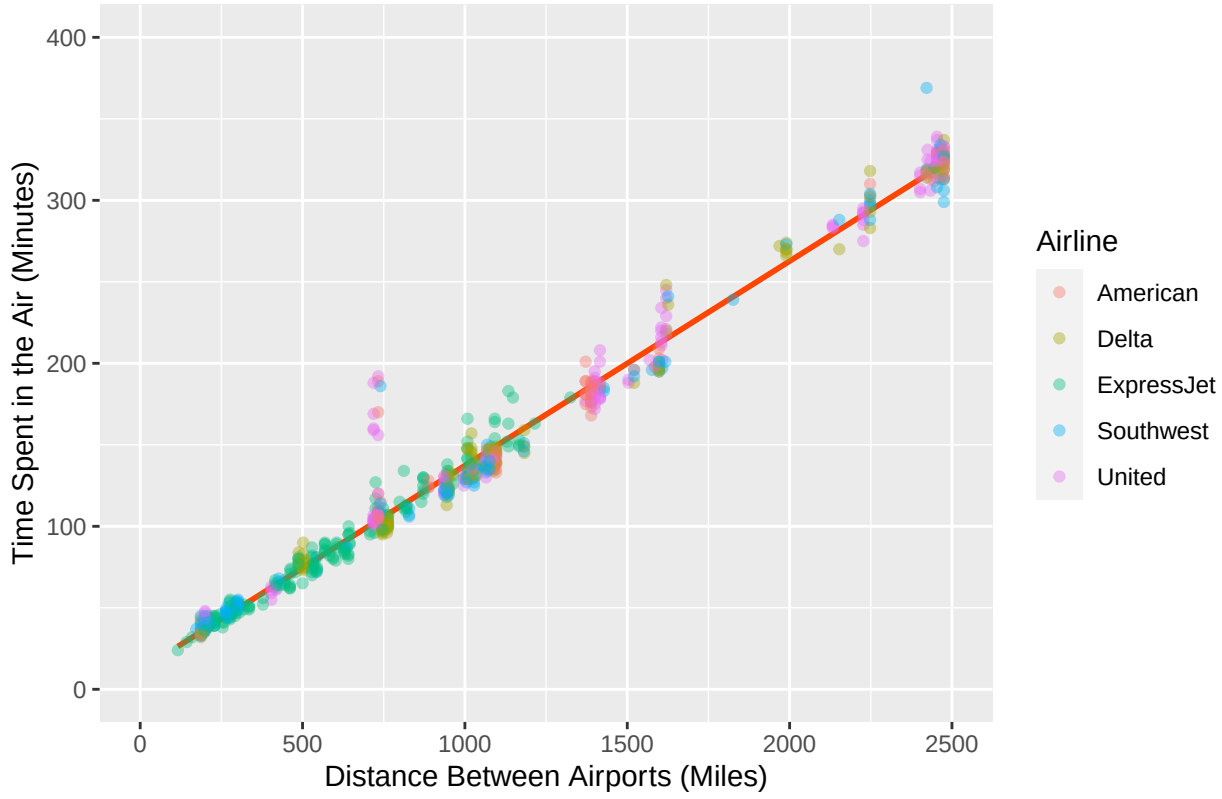
```
#EDA, biggest carriers?
ggplot(flights) +
  geom_bar(aes(carrier, fill = carrier)) +
  labs(title = "Most Popular Airlines in 2013") +
  theme_minimal() +
  coord_polar(start = 0) +
  theme(legend.position = "none",
        axis.title = element_blank())
```



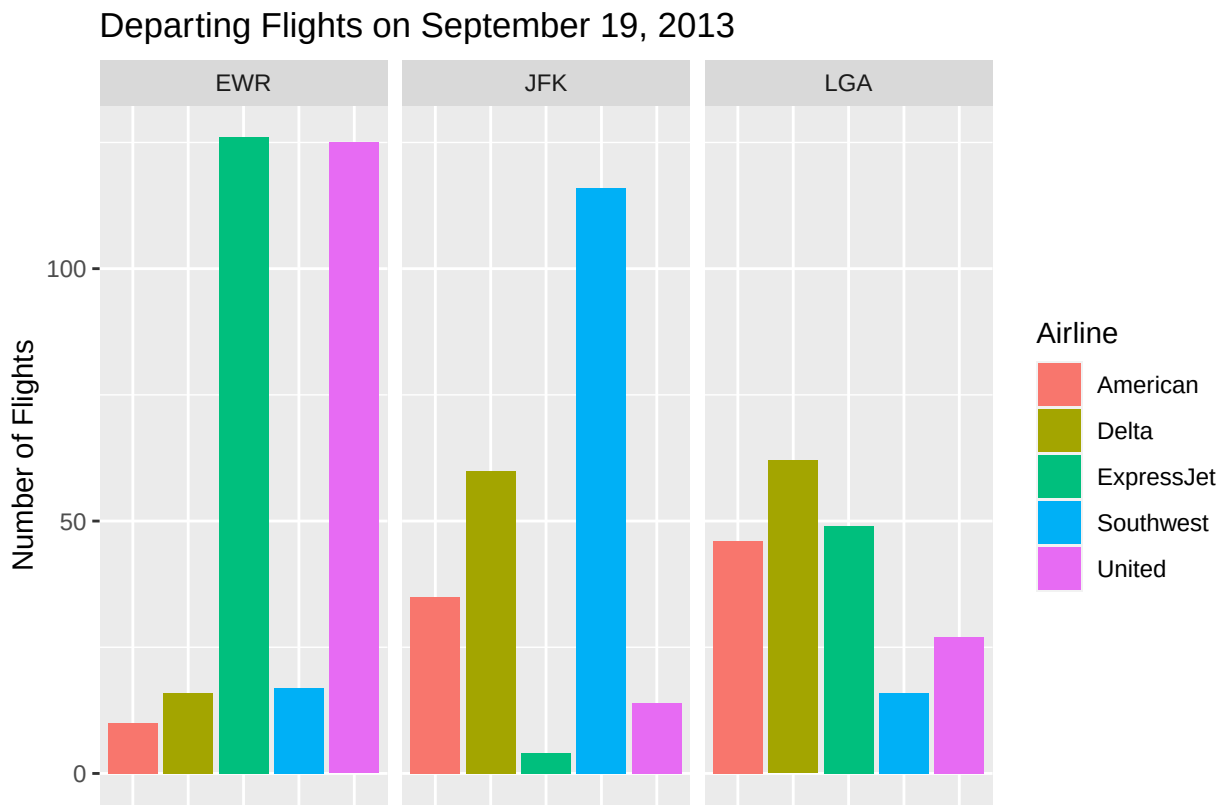

```
#cut data set down to 5 major airlines and 1 single day
major_airlines <- c("B6", "DL", "EV", "UA", "AA")

major_flights_single_day <- flights |>
  filter(carrier %in% major_airlines) |>
  filter(month == "9") |>
  filter(day == "19") |>
  mutate(airline = case_when(carrier == "DL" ~ "Delta",
                             carrier == "AA" ~ "American",
                             carrier == "B6" ~ "Southwest",
                             carrier == "UA" ~ "United",
                             carrier == "EV" ~ "ExpressJet"))
```

```
#flight time vs distance on Sept 19
ggplot(major_flights_single_day) +
  geom_smooth(aes(distance, air_time), method = "lm", color = "orangered", se = FALSE) +
  geom_point(aes(distance, air_time, color = airline), alpha = 0.4) +
  labs(x = "Distance Between Airports (Miles)",
       y = "Time Spent in the Air (Minutes)",
       title = "") +
  guides(color = guide_legend(title = "Airline")) +
  xlim(0, 2500) +
  ylim(0, 400)
```




```
#origin airports on Sept 19
ggplot(major_flights_single_day) +
  geom_bar(aes(airline, fill = airline)) +
  labs(x = "",
       y = "Number of Flights",
       fill = "Airline",
       title = "Departing Flights on September 19, 2013") +
  facet_wrap(~origin) +
  theme(axis.text.x = element_blank(), axis.ticks.x = element_blank())
```


Departing Flights on September 19, 2013
EWR
JFK
LGA
Number of Flights
100
50
0
Airline
American
Delta
ExpressJet
Southwest
United