# Assignment: ASSIGNMENT 4

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# Date: 2021-04-20

```
## Load the ggplot2 package
library(ggplot2)
theme_set(theme_minimal())
```

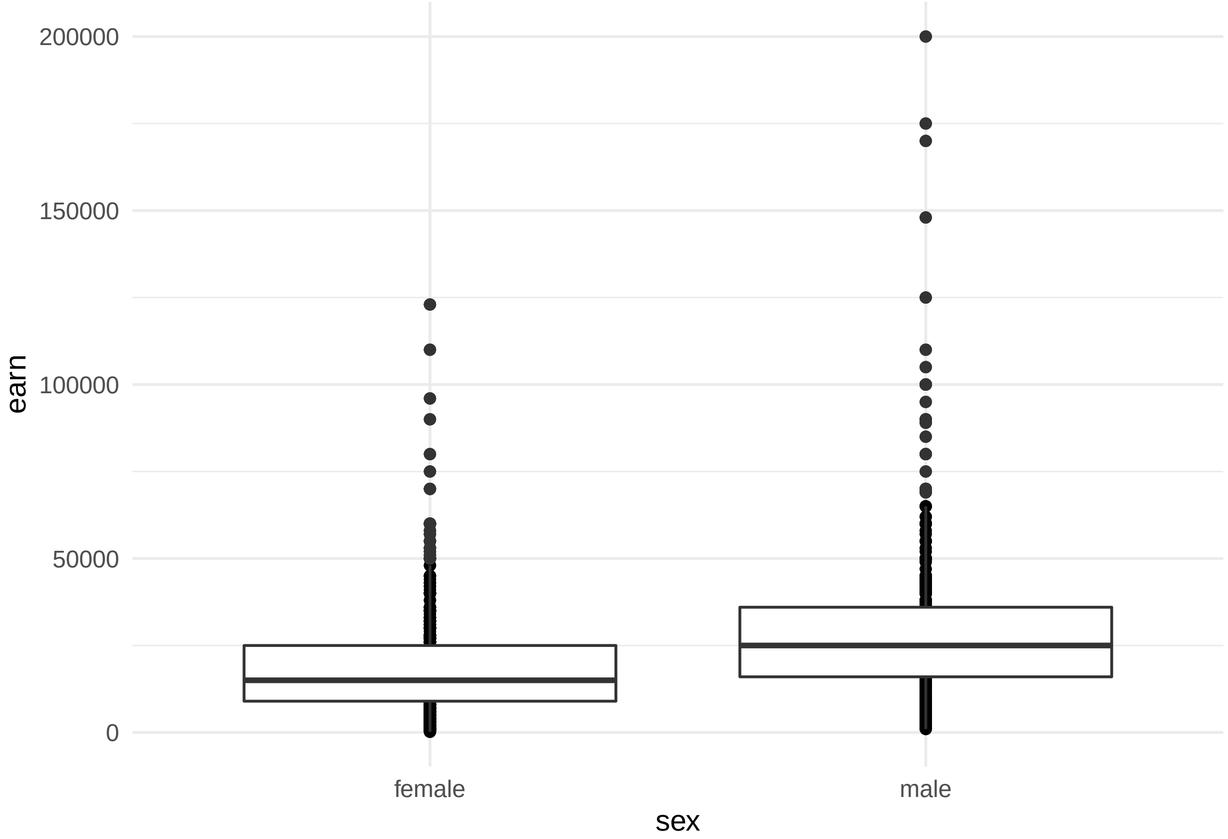
```
## Set the working directory to the root of your DSC 520 directory
## This step is not needed as I have the required data files copied in current working directory
## setwd("/home/jdoe/Workspaces/dsc520")

## Load the `data/r4ds/heights.csv` to
heights_df <- read.csv("./heights.csv")
str(heights_df)
```

```
## 'data.frame':    1192 obs. of  6 variables:
##  $ earn  : num  50000 60000 30000 50000 51000 9000 29000 32000 2000 27000 ...
##  $ height: num  74.4 65.5 63.6 63.1 63.4 ...
##  $ sex   : chr  "male" "female" "female" "female" ...
##  $ ed    : int  16 16 16 16 17 15 12 17 15 12 ...
##  $ age   : int  45 58 29 91 39 26 49 46 21 26 ...
##  $ race  : chr  "white" "white" "white" "other" ...
```

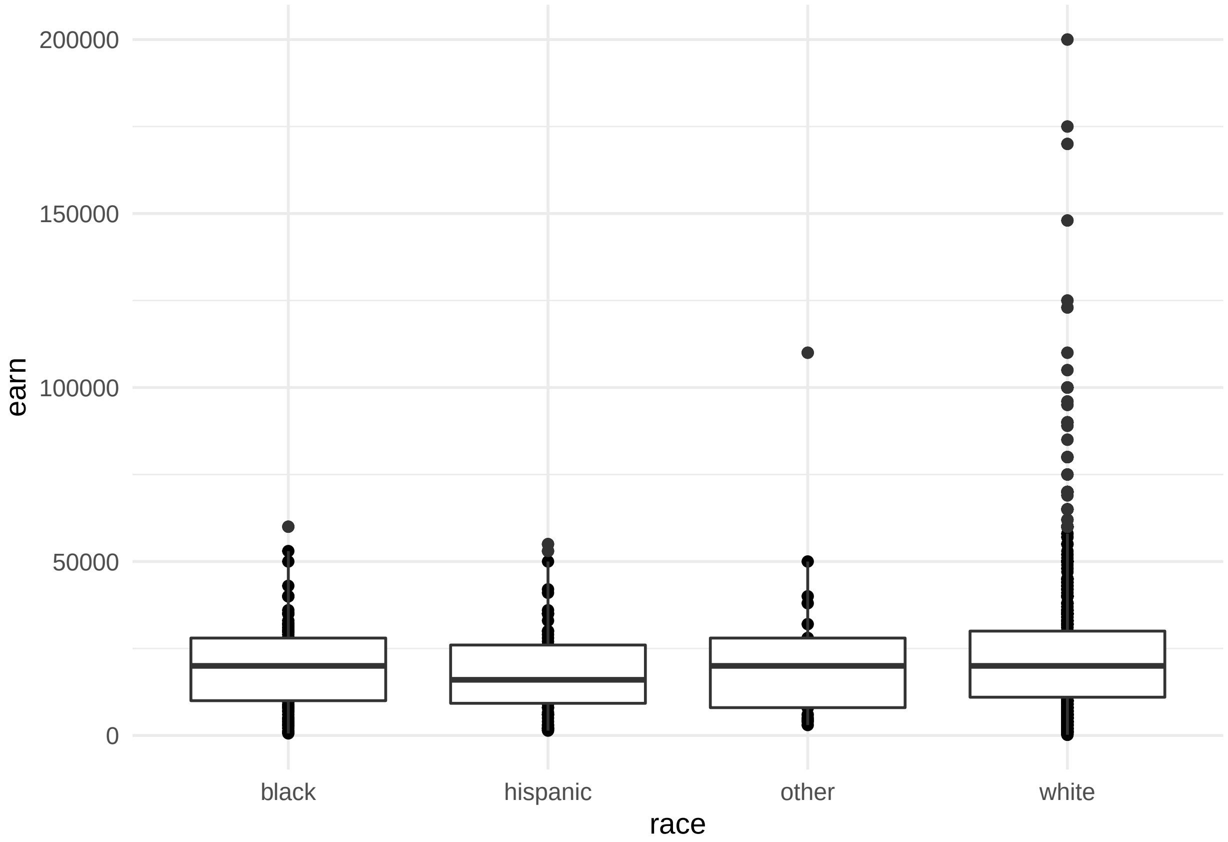
```
head(heights_df)
```

```
##    earn   height    sex ed age  race
## 1 50000 74.42444   male 16  45 white
## 2 60000 65.53754 female 16  58 white
## 3 30000 63.62920 female 16  29 white
## 4 50000 63.10856 female 16  91 other
## 5 51000 63.40248 female 17  39 white
## 6  9000 64.39951 female 15  26 white
```

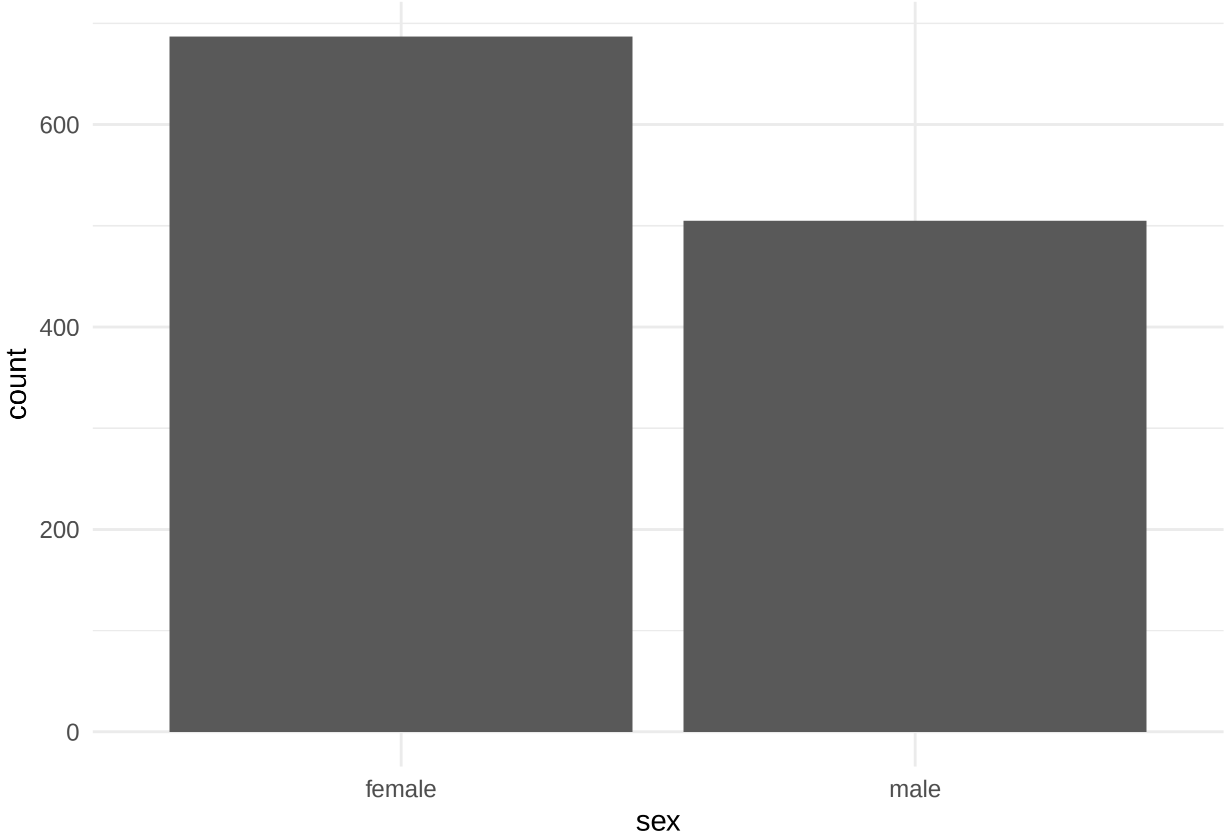
```
# https://ggplot2.tidyverse.org/reference/geom_boxplot.html
## Create boxplots of sex vs. earn and race vs. earn using `geom_point()` and `geom_boxplot()`

## sex vs. earn
ggplot(heights_df, aes(x=sex, y=earn)) + geom_point() + geom_boxplot()
```



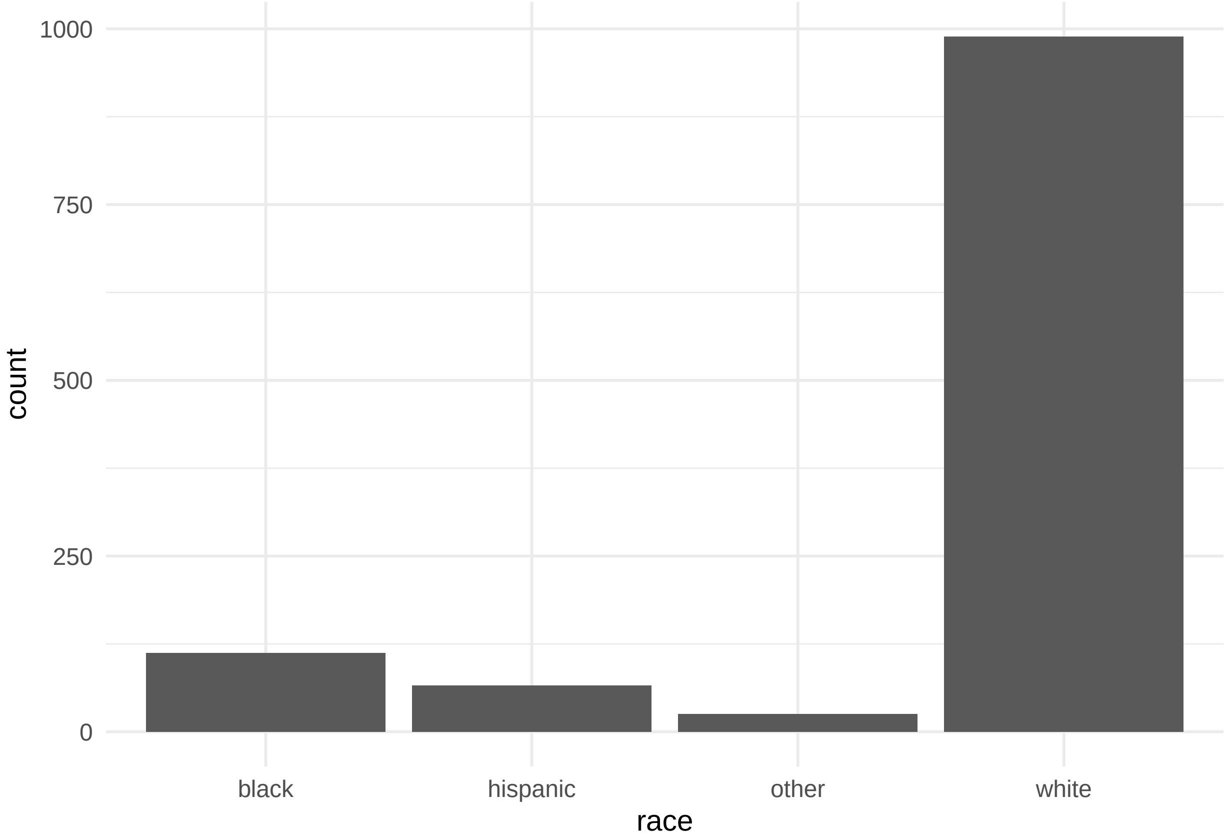
```
## race vs. earn
ggplot(heights_df, aes(x=race, y=earn)) + geom_point() + geom_boxplot()
```



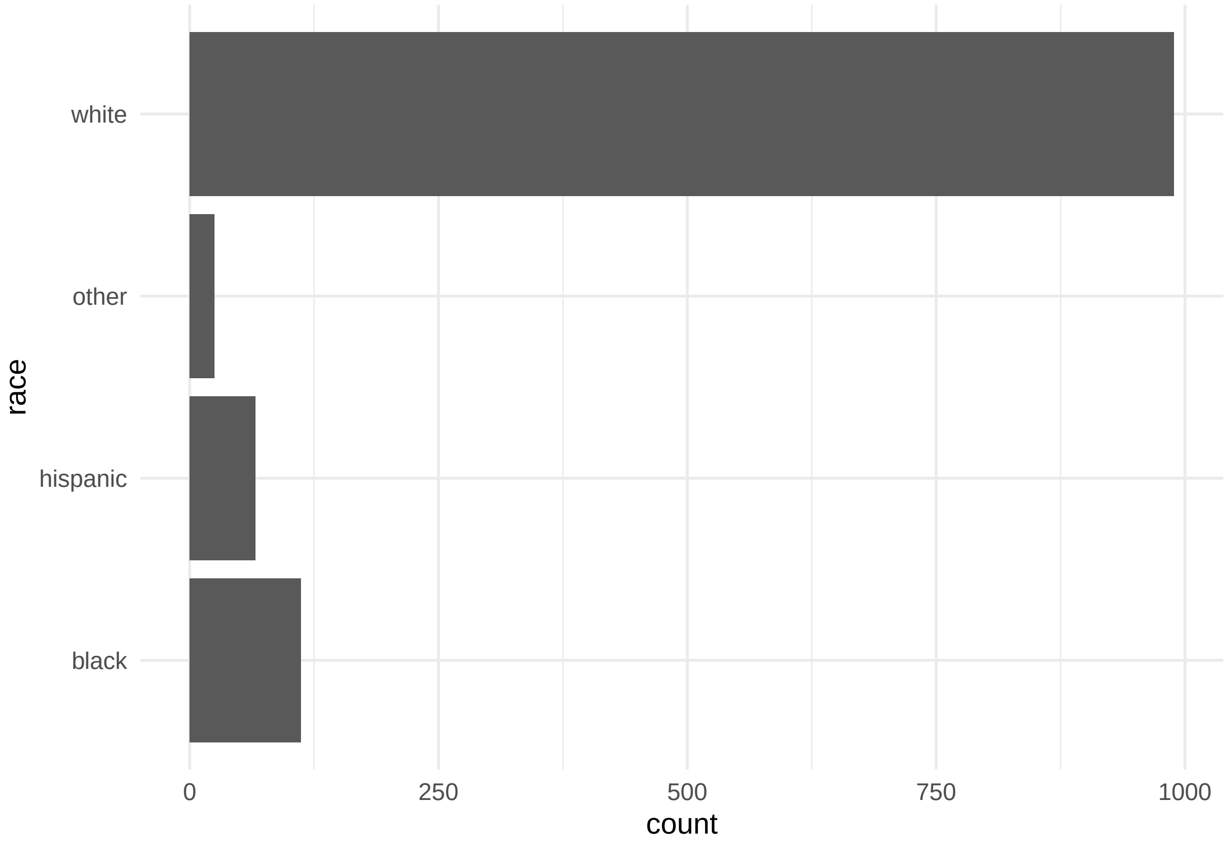
```
# https://ggplot2.tidyverse.org/reference/geom_bar.html
## Using `geom_bar()` plot a bar chart of the number of records for each `sex`
ggplot(heights_df, aes(x=sex)) + geom_bar()
```



```
## Using `geom_bar()` plot a bar chart of the number of records for each race
ggplot(heights_df, aes(x=race)) + geom_bar()
```



```r
## Create a horizontal bar chart by adding `coord_flip()` to the previous plot
ggplot(heights_df, aes(x=race)) + geom_bar() + coord_flip()
```



```
# https://www.rdocumentation.org/packages/ggplot2/versions/3.3.0/topics/geom_path
## Load the file `"data/nytimes/covid-19-data/us-states.csv"` and
## assign it to the `covid_df` dataframe
## copied data file to current working directory
covid_df <- read.csv("./us-states.csv")
str(covid_df)
```

```
## 'data.frame':    3039 obs. of  5 variables:
##  $ date  : chr  "2020-01-21" "2020-01-22" "2020-01-23" "2020-01-24" ...
##  $ state : chr  "Washington" "Washington" "Washington" "Illinois" ...
##  $ fips  : int  53 53 53 17 53 6 17 53 4 6 ...
##  $ cases : int  1 1 1 1 1 1 1 1 1 2 ...
##  $ deaths: int  0 0 0 0 0 0 0 0 0 0 ...
```

```
head(covid_df)
```

```
##         date      state fips cases deaths
## 1 2020-01-21 Washington   53     1      0
## 2 2020-01-22 Washington   53     1      0
## 3 2020-01-23 Washington   53     1      0
## 4 2020-01-24   Illinois   17     1      0
## 5 2020-01-24 Washington   53     1      0
## 6 2020-01-25 California    6     1      0
```

```
## Parse the date column using `as.Date()``
covid_df$date <- as.Date(covid_df$date)
str(covid_df)
```

```
## 'data.frame':    3039 obs. of  5 variables:
```

```
##  $ date  : Date, format: "2020-01-21" "2020-01-22" ...
##  $ state : chr  "Washington" "Washington" "Washington" "Illinois" ...
##  $ fips  : int  53 53 53 17 53 6 17 53 4 6 ...
##  $ cases : int  1 1 1 1 1 1 1 1 1 2 ...
##  $ deaths: int  0 0 0 0 0 0 0 0 0 0 ...
```

```
## Create three dataframes named `california_df`, `ny_df`, and `florida_df`
## containing the data from California, New York, and Florida
california_df <- covid_df[ which(covid_df$state == "California"), ]
ny_df <- covid_df[ which(covid_df$state == "New York"), ]
florida_df <- covid_df[ which(covid_df$state == "Florida"), ]
head(california_df)
```

```
##          date      state fips cases deaths
## 6  2020-01-25 California    6     1      0
## 10 2020-01-26 California    6     2      0
## 14 2020-01-27 California    6     2      0
## 18 2020-01-28 California    6     2      0
## 22 2020-01-29 California    6     2      0
## 26 2020-01-30 California    6     2      0
```

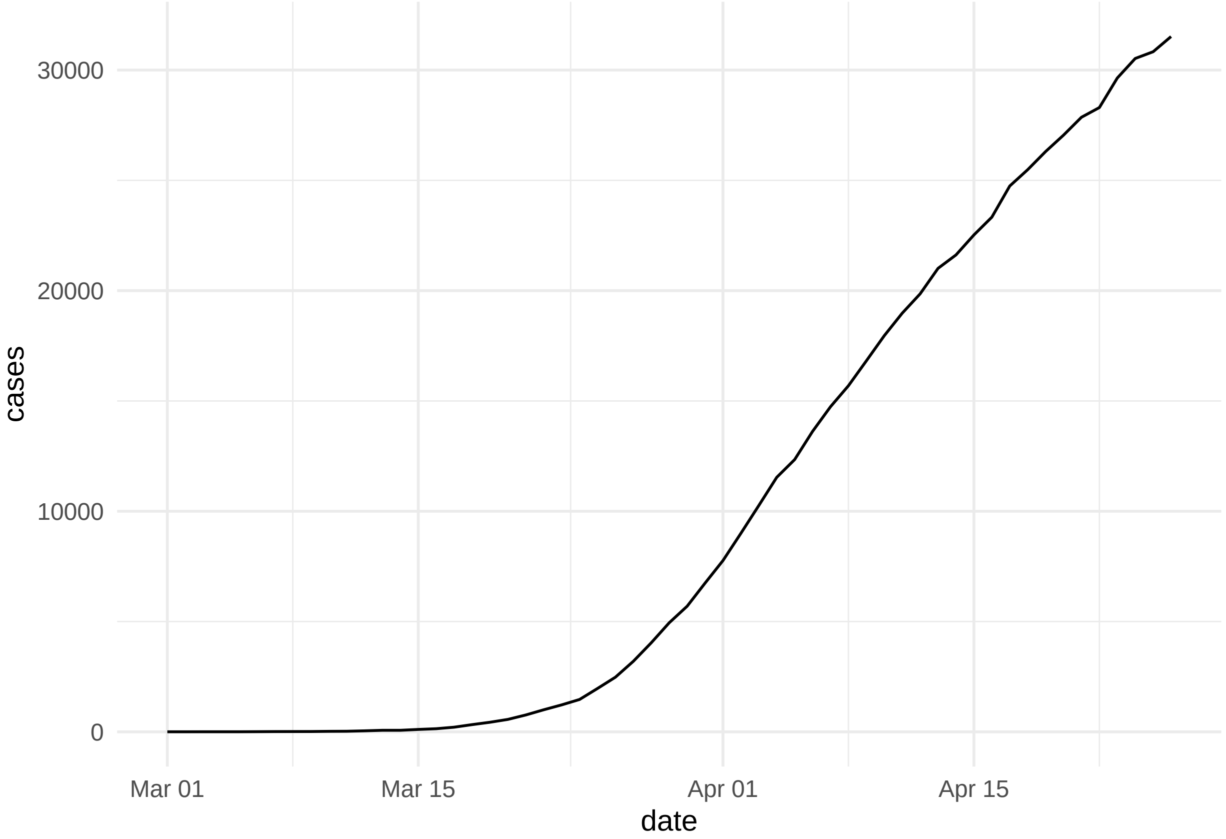
```
head(ny_df)
```

```
##           date    state fips cases deaths
## 247 2020-03-01 New York   36     1      0
## 262 2020-03-02 New York   36     1      0
## 277 2020-03-03 New York   36     2      0
## 294 2020-03-04 New York   36    11      0
## 314 2020-03-05 New York   36    22      0
## 339 2020-03-06 New York   36    44      0
```

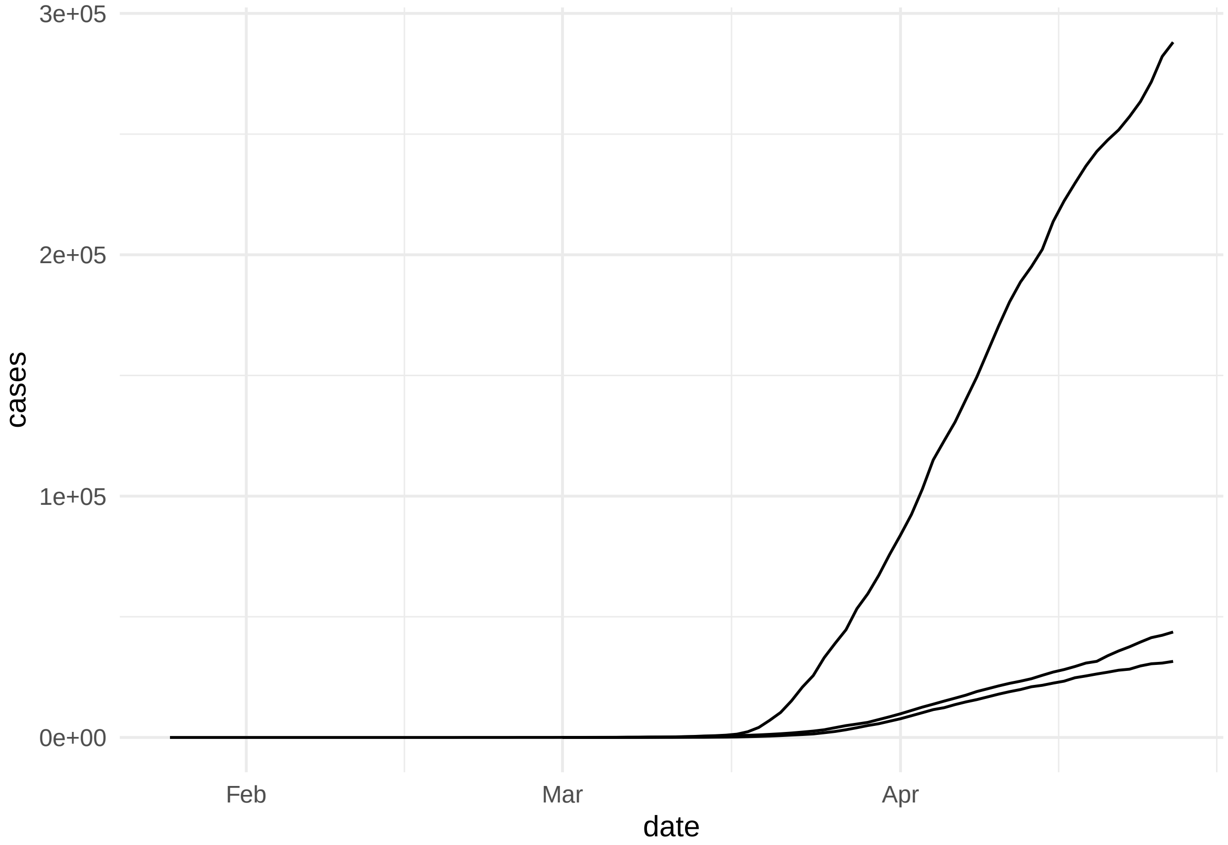
```
head(florida_df)
```

```
##           date   state fips cases deaths
## 243 2020-03-01 Florida   12     2      0
## 256 2020-03-02 Florida   12     2      0
## 271 2020-03-03 Florida   12     3      0
## 287 2020-03-04 Florida   12     3      0
## 305 2020-03-05 Florida   12     4      0
## 326 2020-03-06 Florida   12     7      2
```

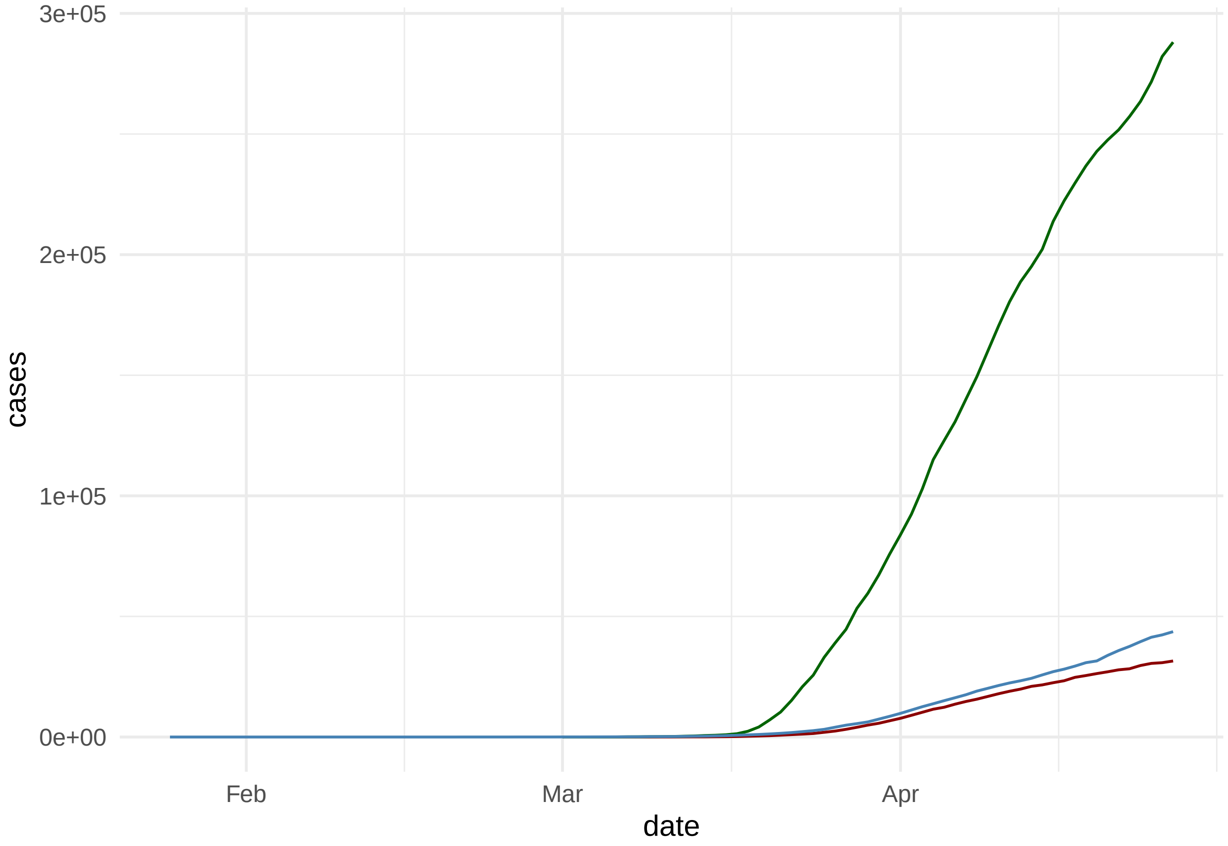
```
## Plot the number of cases in Florida using `geom_line()`
ggplot(data=florida_df, aes(x=date, y=cases, group=1)) + geom_line()
```



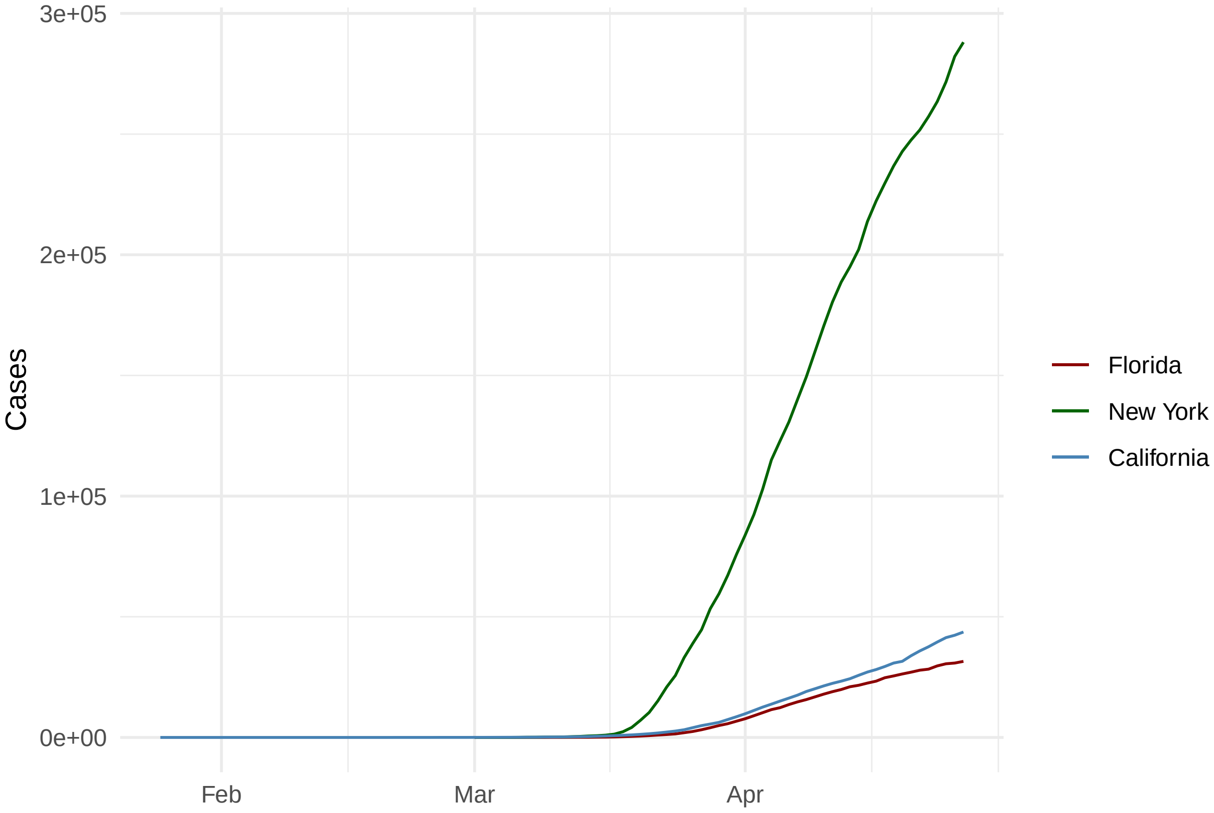
```
## Add lines for New York and California to the plot
ggplot(data=florida_df, aes(x=date, group=1)) +
  geom_line(aes(y = cases)) +
  geom_line(data=ny_df, aes(y = cases)) +
  geom_line(data=california_df, aes(y = cases))
```



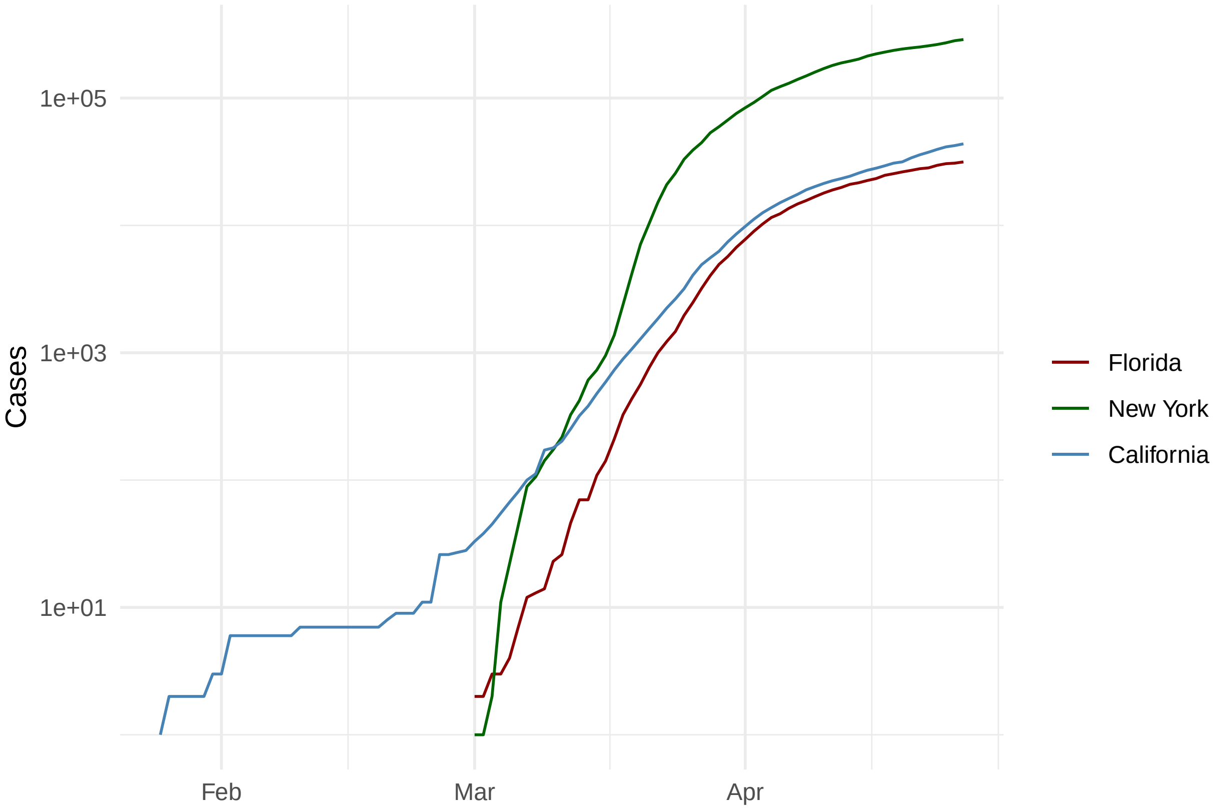
```
## Use the colors "darkred", "darkgreen", and "steelblue" for Florida, New York, and California
ggplot(data=florida_df, aes(x=date, group=1)) +
  geom_line(aes(y = cases), color = "darkred") +
  geom_line(data=ny_df, aes(y = cases), color="darkgreen") +
  geom_line(data=california_df, aes(y = cases), color="steelblue")
```



```
## Add a legend to the plot using `scale_colour_manual`
## Add a blank (" ") label to the x-axis and the label "Cases" to the y axis
ggplot(data=florida_df, aes(x=date, group=1)) +
  geom_line(aes(y = cases, colour = "Florida")) +
  geom_line(data=ny_df, aes(y = cases,colour="New York")) +
  geom_line(data=california_df, aes(y = cases, colour="California")) +
  scale_colour_manual("",
                      breaks = c("Florida", "New York", "California"),
                      values = c("darkred", "darkgreen", "steelblue")) +
  xlab(" ") + ylab("Cases")
```



```
## Scale the y axis using `scale_y_log10()`
ggplot(data=florida_df, aes(x=date, group=1)) +
  geom_line(aes(y = cases, colour = "Florida")) +
  geom_line(data=ny_df, aes(y = cases,colour="New York")) +
  geom_line(data=california_df, aes(y = cases, colour="California")) +
  scale_colour_manual("",
                      breaks = c("Florida", "New York", "California"),
                      values = c("darkred", "darkgreen", "steelblue")) +
  xlab(" ") + ylab("Cases") + scale_y_log10()
```


Cases
1e+05
1e+03
1e+01
Feb
Mar
Apr
Florida
New York
California