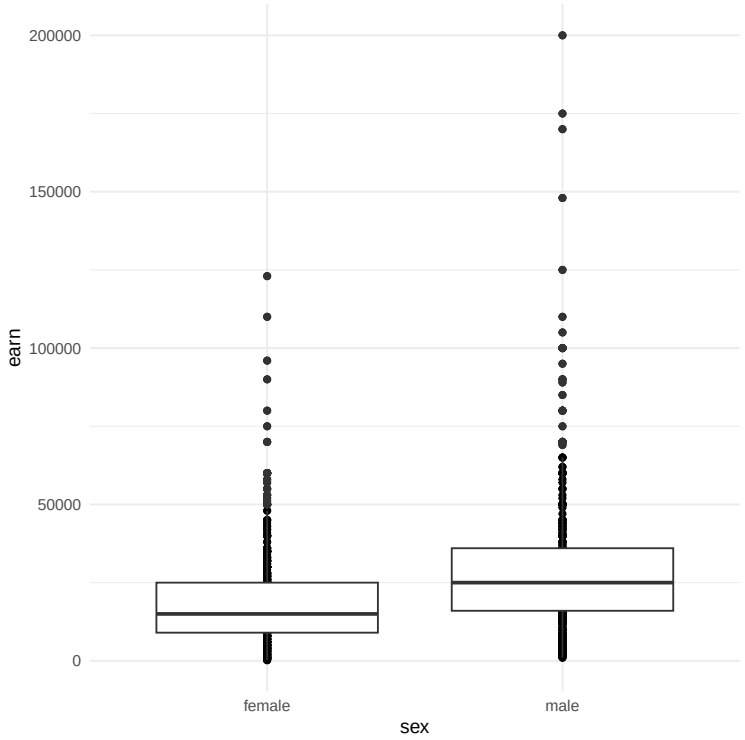
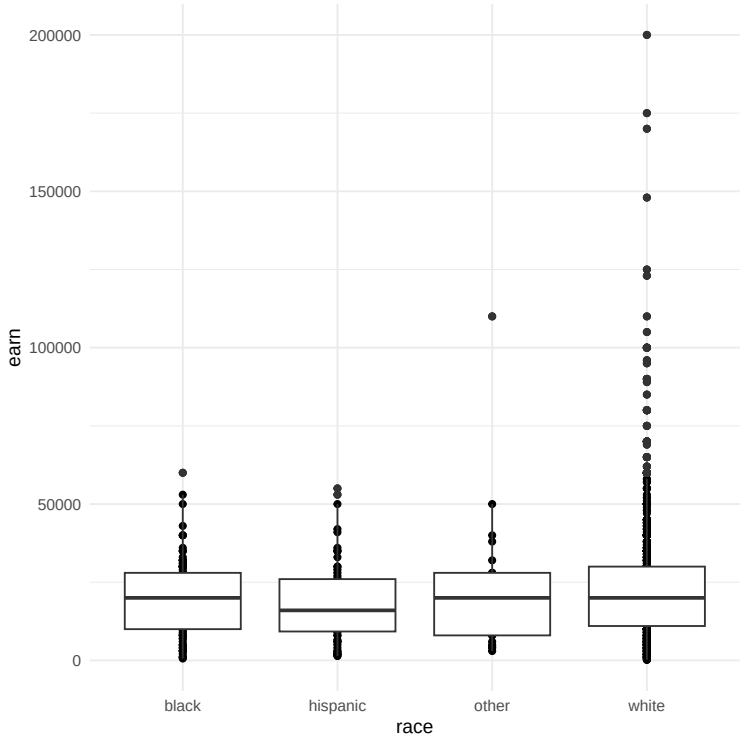
July 13, 2023

The results below are generated from an R script.

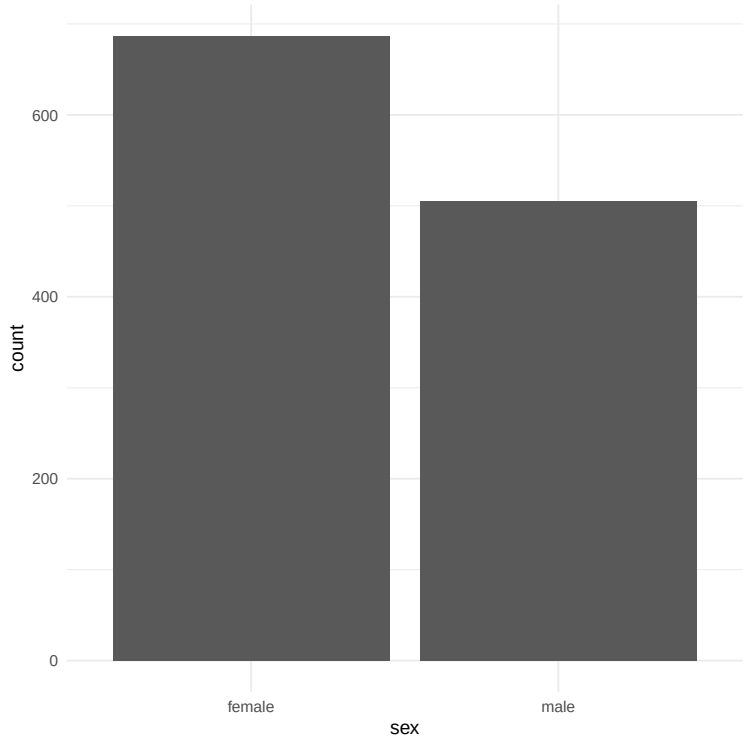
```
# Assignment: ASSIGNMENT 4
# Name: Tang, Xin
# Date: 2023-07-08

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

## Set the working directory to the root of your DSC 520 directory
setwd("~/dsc520")

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

# 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()
```



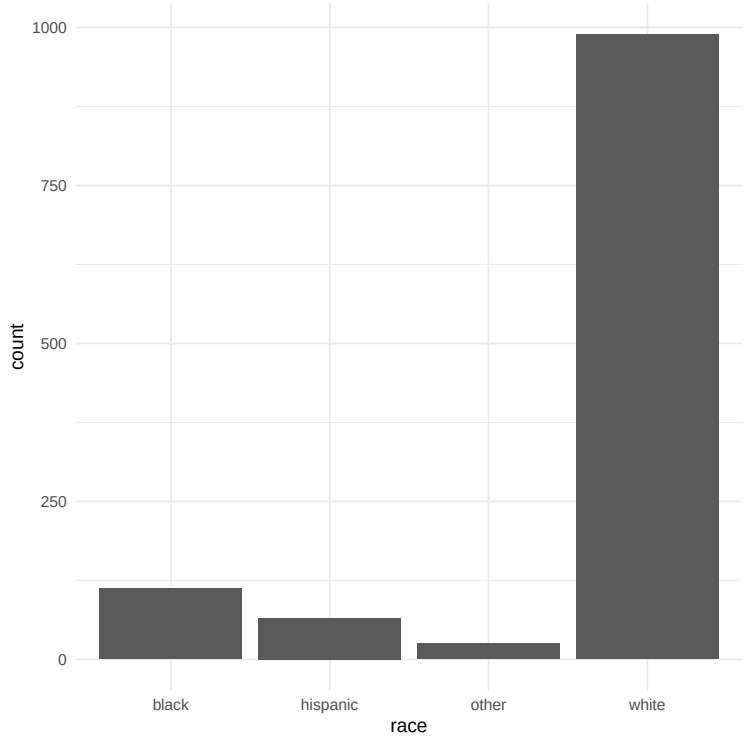
```
## race vs. earn
ggplot(heights_df, aes(x=race, y=earn)) + geom_point()+ geom_boxplot()
```



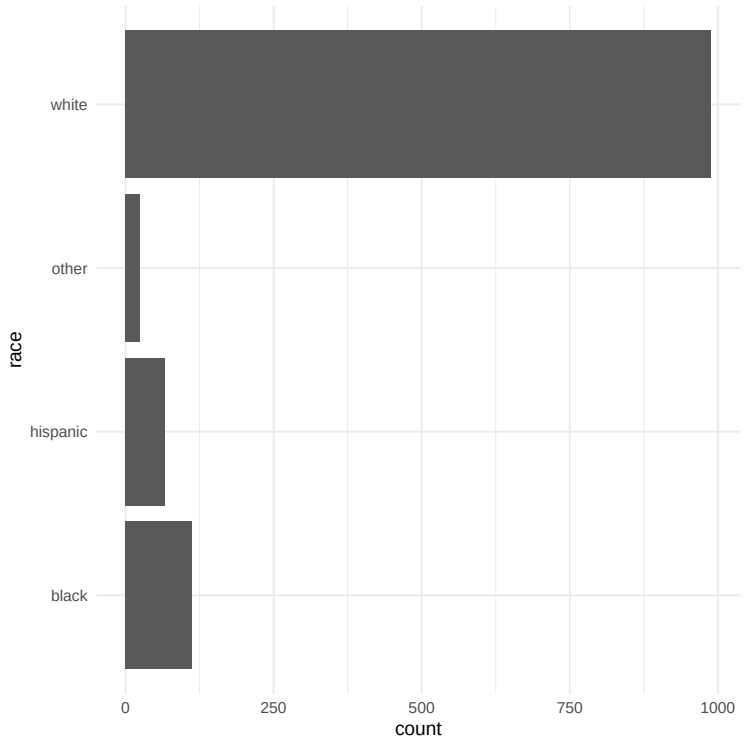

```
# https://ggplot2.tidyverse.org/reference/geom_bar.html
## Using `geom_bar()` plot a bar chart of the number of records for each `sex`
ggplot(heights_df, aes(x=sex)) + geom_bar()
```




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



```
## 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
covid_df <- read.csv("data/nytimes/covid-19-data/us-states.csv")
View(covid_df)

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

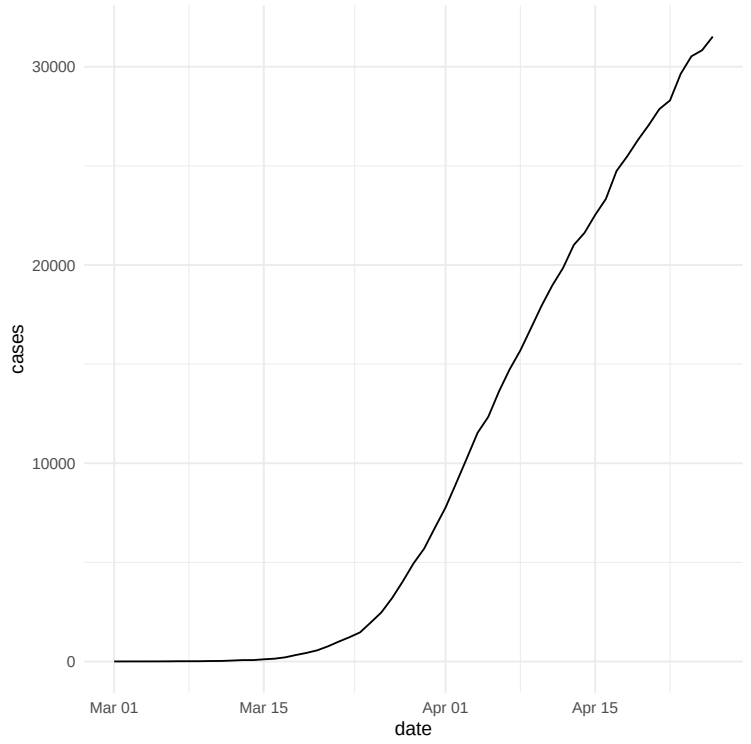
```
##    [1] "2020-01-21" "2020-01-22" "2020-01-23" "2020-01-24" "2020-01-24" "2020-01-25"
##    [7] "2020-01-25" "2020-01-25" "2020-01-26" "2020-01-26" "2020-01-26" "2020-01-26"
##   [13] "2020-01-27" "2020-01-27" "2020-01-27" "2020-01-27" "2020-01-28" "2020-01-28"
##   [19] "2020-01-28" "2020-01-28" "2020-01-29" "2020-01-29" "2020-01-29" "2020-01-29"
##   [25] "2020-01-30" "2020-01-30" "2020-01-30" "2020-01-30" "2020-01-31" "2020-01-31"
##   [31] "2020-01-31" "2020-01-31" "2020-02-01" "2020-02-01" "2020-02-01" "2020-02-01"
##   [37] "2020-02-01" "2020-02-02" "2020-02-02" "2020-02-02" "2020-02-02" "2020-02-02"
##   [43] "2020-02-03" "2020-02-03" "2020-02-03" "2020-02-03" "2020-02-03" "2020-02-04"
##   [49] "2020-02-04" "2020-02-04" "2020-02-04" "2020-02-04" "2020-02-05" "2020-02-05"
##   [55] "2020-02-05" "2020-02-05" "2020-02-05" "2020-02-05" "2020-02-06" "2020-02-06"
##   [61] "2020-02-06" "2020-02-06" "2020-02-06" "2020-02-06" "2020-02-07" "2020-02-07"
##   [67] "2020-02-07" "2020-02-07" "2020-02-07" "2020-02-07" "2020-02-08" "2020-02-08"
##   [73] "2020-02-08" "2020-02-08" "2020-02-08" "2020-02-08" "2020-02-09" "2020-02-09"
##   [79] "2020-02-09" "2020-02-09" "2020-02-09" "2020-02-09" "2020-02-10" "2020-02-10"
##   [85] "2020-02-10" "2020-02-10" "2020-02-10" "2020-02-10" "2020-02-11" "2020-02-11"
##   [91] "2020-02-11" "2020-02-11" "2020-02-11" "2020-02-11" "2020-02-12" "2020-02-12"
```

```
##   [97] "2020-02-12" "2020-02-12" "2020-02-12" "2020-02-12" "2020-02-12" "2020-02-13"
##  [103] "2020-02-13" "2020-02-13" "2020-02-13" "2020-02-13" "2020-02-13" "2020-02-13"
##  [109] "2020-02-14" "2020-02-14" "2020-02-14" "2020-02-14" "2020-02-14" "2020-02-14"
##  [115] "2020-02-14" "2020-02-15" "2020-02-15" "2020-02-15" "2020-02-15" "2020-02-15"
##  [121] "2020-02-15" "2020-02-15" "2020-02-16" "2020-02-16" "2020-02-16" "2020-02-16"
##  [127] "2020-02-16" "2020-02-16" "2020-02-16" "2020-02-17" "2020-02-17" "2020-02-17"
##  [133] "2020-02-17" "2020-02-17" "2020-02-17" "2020-02-17" "2020-02-17" "2020-02-18"
##  [139] "2020-02-18" "2020-02-18" "2020-02-18" "2020-02-18" "2020-02-18" "2020-02-18"
##  [145] "2020-02-18" "2020-02-19" "2020-02-19" "2020-02-19" "2020-02-19" "2020-02-19"
##  [151] "2020-02-19" "2020-02-19" "2020-02-19" "2020-02-20" "2020-02-20" "2020-02-20"
##  [157] "2020-02-20" "2020-02-20" "2020-02-20" "2020-02-20" "2020-02-20" "2020-02-21"
##  [163] "2020-02-21" "2020-02-21" "2020-02-21" "2020-02-21" "2020-02-21" "2020-02-21"
##  [169] "2020-02-21" "2020-02-22" "2020-02-22" "2020-02-22" "2020-02-22" "2020-02-22"
##  [175] "2020-02-22" "2020-02-22" "2020-02-22" "2020-02-23" "2020-02-23" "2020-02-23"
##  [181] "2020-02-23" "2020-02-23" "2020-02-23" "2020-02-23" "2020-02-23" "2020-02-24"
##  [187] "2020-02-24" "2020-02-24" "2020-02-24" "2020-02-24" "2020-02-24" "2020-02-24"
##  [193] "2020-02-24" "2020-02-25" "2020-02-25" "2020-02-25" "2020-02-25" "2020-02-25"
##  [199] "2020-02-25" "2020-02-25" "2020-02-25" "2020-02-25" "2020-02-26" "2020-02-26"
##  [205] "2020-02-26" "2020-02-26" "2020-02-26" "2020-02-26" "2020-02-26" "2020-02-26"
##  [211] "2020-02-26" "2020-02-27" "2020-02-27" "2020-02-27" "2020-02-27" "2020-02-27"
##  [217] "2020-02-27" "2020-02-27" "2020-02-27" "2020-02-27" "2020-02-28" "2020-02-28"
##  [223] "2020-02-28" "2020-02-28" "2020-02-28" "2020-02-28" "2020-02-28" "2020-02-28"
##  [229] "2020-02-28" "2020-02-28" "2020-02-29" "2020-02-29" "2020-02-29" "2020-02-29"
##  [235] "2020-02-29" "2020-02-29" "2020-02-29" "2020-02-29" "2020-02-29" "2020-02-29"
##  [241] "2020-03-01" "2020-03-01" "2020-03-01" "2020-03-01" "2020-03-01" "2020-03-01"
##  [247] "2020-03-01" "2020-03-01" "2020-03-01" "2020-03-01" "2020-03-01" "2020-03-01"
##  [253] "2020-03-01" "2020-03-02" "2020-03-02" "2020-03-02" "2020-03-02" "2020-03-02"
##  [259] "2020-03-02" "2020-03-02" "2020-03-02" "2020-03-02" "2020-03-02" "2020-03-02"
##  [265] "2020-03-02" "2020-03-02" "2020-03-02" "2020-03-02" "2020-03-03" "2020-03-03"
##  [271] "2020-03-03" "2020-03-03" "2020-03-03" "2020-03-03" "2020-03-03" "2020-03-03"
##  [277] "2020-03-03" "2020-03-03" "2020-03-03" "2020-03-03" "2020-03-03" "2020-03-03"
##  [283] "2020-03-03" "2020-03-03" "2020-03-04" "2020-03-04" "2020-03-04" "2020-03-04"
##  [289] "2020-03-04" "2020-03-04" "2020-03-04" "2020-03-04" "2020-03-04" "2020-03-04"
##  [295] "2020-03-04" "2020-03-04" "2020-03-04" "2020-03-04" "2020-03-04" "2020-03-04"
##  [301] "2020-03-04" "2020-03-05" "2020-03-05" "2020-03-05" "2020-03-05" "2020-03-05"
##  [307] "2020-03-05" "2020-03-05" "2020-03-05" "2020-03-05" "2020-03-05" "2020-03-05"
##  [313] "2020-03-05" "2020-03-05" "2020-03-05" "2020-03-05" "2020-03-05" "2020-03-05"
##  [319] "2020-03-05" "2020-03-05" "2020-03-05" "2020-03-05" "2020-03-06" "2020-03-06"
##  [325] "2020-03-06" "2020-03-06" "2020-03-06" "2020-03-06" "2020-03-06" "2020-03-06"
##  [331] "2020-03-06" "2020-03-06" "2020-03-06" "2020-03-06" "2020-03-06" "2020-03-06"
##  [337] "2020-03-06" "2020-03-06" "2020-03-06" "2020-03-06" "2020-03-06" "2020-03-06"
##  [343] "2020-03-06" "2020-03-06" "2020-03-06" "2020-03-06" "2020-03-06" "2020-03-06"
##  [349] "2020-03-06" "2020-03-06" "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07"
##  [355] "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07"
##  [361] "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07"
##  [367] "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07"
##  [373] "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07"
##  [379] "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-07" "2020-03-08"
##  [385] "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08"
##  [391] "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08"
##  [397] "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08"
##  [403] "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08"
##  [409] "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08"
```

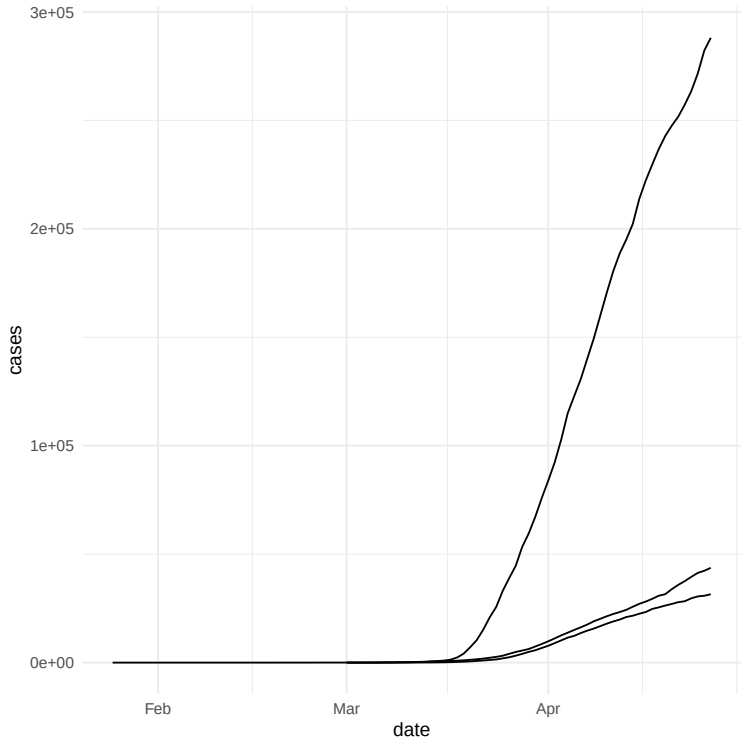
```
##  [415] "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-08" "2020-03-09" "2020-03-09"
##  [421] "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09"
##  [427] "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09"
##  [433] "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09"
##  [439] "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09"
##  [445] "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09"
##  [451] "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-09" "2020-03-10"
##  [457] "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10"
##  [463] "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10"
##  [469] "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10"
##  [475] "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10"
##  [481] "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10"
##  [487] "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10" "2020-03-10"
##  [493] "2020-03-10" "2020-03-10" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11"
##  [499] "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11"
##  [505] "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11"
##  [511] "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11"
##  [517] "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11"
##  [523] "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11"
##  [529] "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11"
##  [535] "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-11" "2020-03-12"
##  [541] "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12"
##  [547] "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12"
##  [553] "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12"
##  [559] "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12"
##  [565] "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12"
##  [571] "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12"
##  [577] "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12"
##  [583] "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-12" "2020-03-13" "2020-03-13"
##  [589] "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13"
##  [595] "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13"
##  [601] "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13"
##  [607] "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13"
##  [613] "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13"
##  [619] "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13"
##  [625] "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13"
##  [631] "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13" "2020-03-13"
##  [637] "2020-03-13" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14"
##  [643] "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14"
##  [649] "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14"
##  [655] "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14"
##  [661] "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14"
##  [667] "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14"
##  [673] "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14"
##  [679] "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14"
##  [685] "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-14" "2020-03-15"
##  [691] "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15"
##  [697] "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15"
##  [703] "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15"
##  [709] "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15"
##  [715] "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15"
##  [721] "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15"
##  [727] "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15"
```

```
##  [733] "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15"
##  [739] "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-15" "2020-03-16" "2020-03-16"
##  [745] "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16"
##  [751] "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16"
##  [757] "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16"
##  [763] "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16"
##  [769] "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16"
##  [775] "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16"
##  [781] "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16"
##  [787] "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-16"
##  [793] "2020-03-16" "2020-03-16" "2020-03-16" "2020-03-17" "2020-03-17" "2020-03-17"
##  [799] "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17"
##  [805] "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17"
##  [811] "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17"
##  [817] "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17"
##  [823] "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17"
##  [829] "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17"
##  [835] "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17"
##  [841] "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-17"
##  [847] "2020-03-17" "2020-03-17" "2020-03-17" "2020-03-18" "2020-03-18" "2020-03-18"
##  [853] "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18"
##  [859] "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18"
##  [865] "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18"
##  [871] "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18"
##  [877] "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18"
##  [883] "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18"
##  [889] "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18"
##  [895] "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-18"
##  [901] "2020-03-18" "2020-03-18" "2020-03-18" "2020-03-19" "2020-03-19" "2020-03-19"
##  [907] "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19"
##  [913] "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19"
##  [919] "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19"
##  [925] "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19"
##  [931] "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19"
##  [937] "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19"
##  [943] "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19"
##  [949] "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-19"
##  [955] "2020-03-19" "2020-03-19" "2020-03-19" "2020-03-20" "2020-03-20" "2020-03-20"
##  [961] "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20"
##  [967] "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20"
##  [973] "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20"
##  [979] "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20"
##  [985] "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20"
##  [991] "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20"
##  [997] "2020-03-20" "2020-03-20" "2020-03-20" "2020-03-20"
##  [ reached 'max' / getOption("max.print") -- omitted 2039 entries ]

## 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"), ]

## Plot the number of cases in Florida using `geom_line()`
```

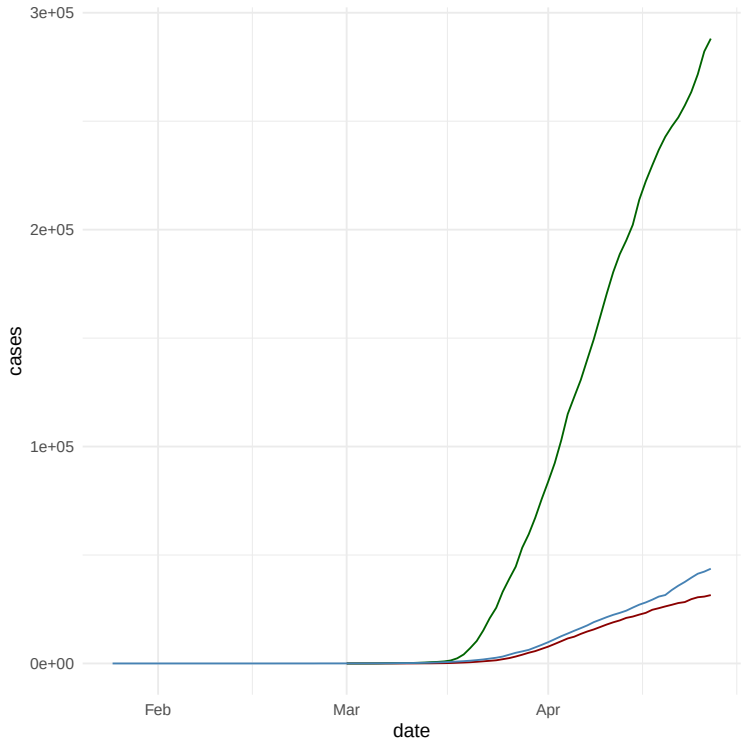
```
ggplot(data=florida_df, aes(x=date, y=cases, group=1)) + geom_line()
```



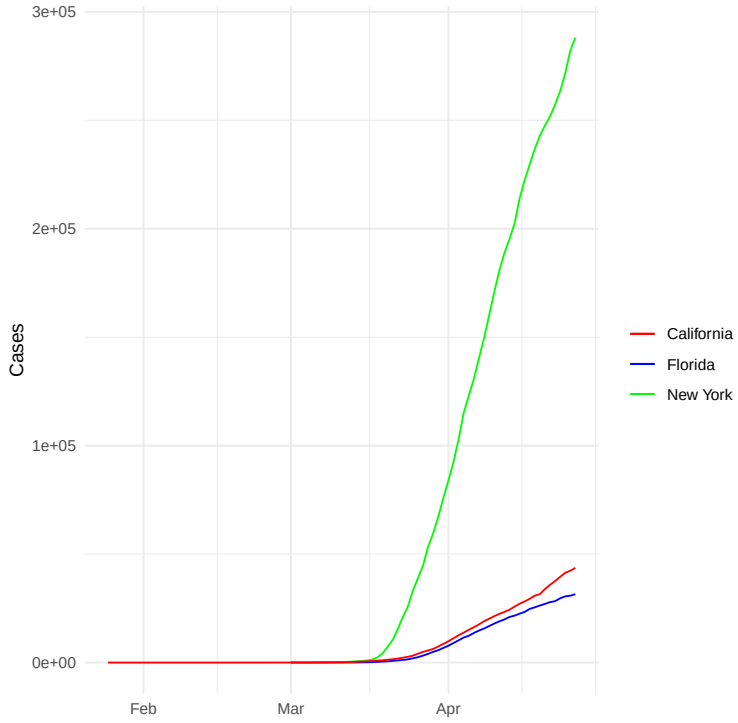

```
## Add lines for New York and California to the plot
ggplot(data=florida_df, aes(x=date, group=1)) +
  geom_line(aes(y = cases)) +
  geom_line(data=ny_df, aes(y = cases)) +
  geom_line(data=california_df, aes(y = cases))
```



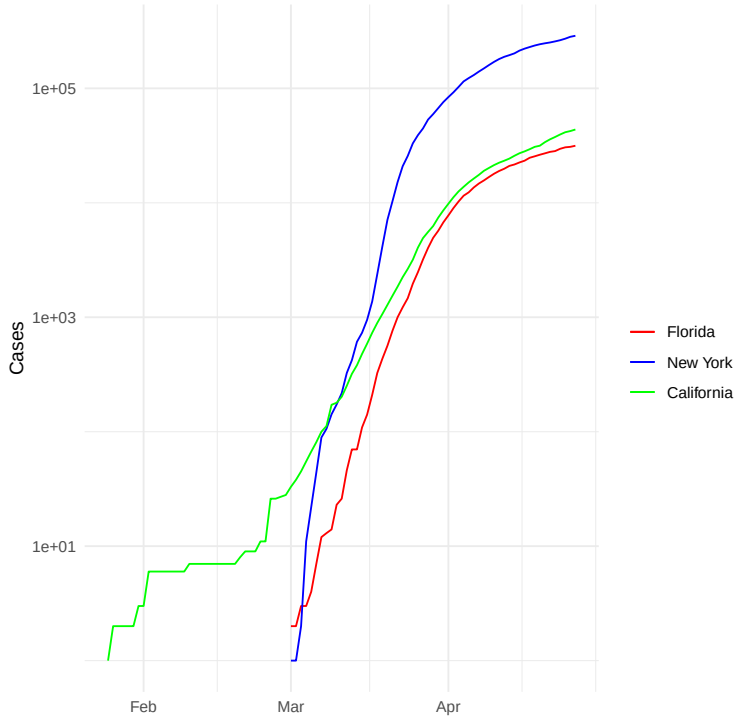

```
## Use the colors "darkred", "darkgreen", and "steelblue" for Florida, New York, and California
ggplot(data=florida_df, aes(x=date, group=1)) +
  geom_line(aes(y = cases), color = 'darkred') +
  geom_line(data=ny_df, aes(y = cases), color='darkgreen') +
  geom_line(data=california_df, aes(y = cases), 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 = waiver(),
                      values = c('red', 'blue', 'green')) +
  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('red', 'blue', 'green')) +
  xlab(" ") + ylab("Cases") + scale_y_log10()
```



The R session information (including the OS info, R version and all packages used):

```
sessionInfo()

## R version 4.3.1 (2023-06-16 ucrt)
## Platform: x86_64-w64-mingw32/x64 (64-bit)
## Running under: Windows 10 x64 (build 19045)
##
## Matrix products: default
##
##
## locale:
## [1] LC_COLLATE=English_United States.utf8  LC_CTYPE=English_United States.utf8
## [3] LC_MONETARY=English_United States.utf8 LC_NUMERIC=C
## [5] LC_TIME=English_United States.utf8
##
## time zone: America/Chicago
## tzcode source: internal
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## other attached packages:
## [1] ggplot2_3.4.2
##
## loaded via a namespace (and not attached):
##  [1] vctrs_0.6.2      cli_3.6.1        knitr_1.43       rlang_1.1.1      xfun_0.39
##  [6] highr_0.10       generics_0.1.3   glue_1.6.2       labeling_0.4.2   colorspace_2.1-0
## [11] scales_1.2.1     fansi_1.0.4      grid_4.3.1       munsell_0.5.0    evaluate_0.21
## [16] tibble_3.2.1     lifecycle_1.0.3  compiler_4.3.1   dplyr_1.1.2      pkgconfig_2.0.3
## [21] rstudioapi_0.14  farver_2.1.1     R6_2.5.1         tidyselect_1.2.0 utf8_1.2.3
```

```
## [26] pillar_1.9.0     magrittr_2.0.3   tools_4.3.1      withr_2.5.0      gtable_0.3.3
```

```
Sys.time()
```

```
## [1] "2023-07-13 15:16:21 CDT"
```