MSCS 264: Homework #15

You should submit a knitted pdf file on Moodle, but be sure to show all of your R code, in addition to your output, plots, and written responses.

Web scraping

1. Read in the table of data found at the link here and create a scatterplot of land area versus the 2019 estimated population. Additionally, do necessary tidying: get rid of extraneous information in the cells, parse columns into the proper format, etc. A few things to look for:

- The function `as_tibble` may be helpful, but you'll want to make sure there's no duplicate variable names before converting a data set into a tibble.
- Use variable names that don't require single quotes.
- Be sure variables in your tibble are of proper type.
- Remove footnotes in square brackets from city names.
- Print out your tidy tibble in addition to your plot.

Further hints:

- if you want, you can delete the land area column and the population density column with km2, since (a) it's a bear that they both have the same name in wikipedia, and (b) once you know sq miles, you can always convert to km2. You can also delete the location column if you want. Thus, your cleaned data set should have a minimum of 314 rows and 8 columns.
- note that if you do parse_number(Change), it turns everything positive. See if you can clean the Change column and still preserve the negatives.
- str_replace or str_remove can be helpful in removing footnotes [.]

Hello! I'm making a change!

```r
2 + 2
```

```
## [1] 4
```

Now I'm making a change from GitHub!!!

2. Following the examples from class, use the `rvest` package to pull off data from the link here with the top 50 grossing films from 2018. Generate a tibble that contains the title, gross, star rating (imdbscore), and metascore for the top 50 films. Then create a scatterplot of star rating versus Gross. A couple of hints:

- use SelectorGadget
- use tibble(var1, var2, var3, var4) to put together individual vectors of values into a single tibble with 4 columns

3. Identify which films of the top 50 from 2018 had the biggest discrepancy between reviewers (metascore) and viewers (star rating).

4. 5 points if you push your Rmd file with HW15 solutions along with the knitted pdf file to your MSCS264-HW15 repository in your GitHub account. So that I can check, make your repository private (good practice when doing HW), but add me (username = lfbv) as a collaborator under Settings > Collaborators.

Map example

```
vaccine_data <- read_csv("Data/exam1data.csv")
```

```
##
## -- Column specification --------------------------------------------------------
## cols(
##   State = col_character(),
##   Date = col_date(format = ""),
##   people_vaccinated = col_double(),
##   total_distributed = col_double(),
##   share_doses_used = col_double(),
##   people_vaccinated_per100 = col_double(),
##   Governor = col_character(),
##   Region = col_character(),
##   month0 = col_double(),
##   day0 = col_double(),
##   year0 = col_double(),
##   est_population = col_double(),
##   dist_per_person = col_double(),
##   prev_day = col_double(),
##   daily_vaccinated = col_double()
## )
```

```
vacc_mar13 <- vaccine_data %>%
  filter(Date =="2021-03-13") %>%
  select(State, Date, people_vaccinated_per100, share_doses_used, Governor) %>%
  mutate(State = str_replace(State, " State", ""),
         State = str_to_lower(State))


library(viridis) # for color schemes
```

```
## Loading required package: viridisLite
```

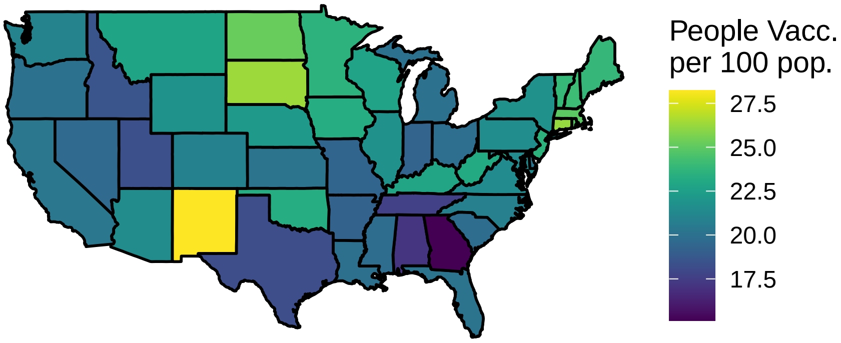
```
library(maps)
```

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

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

```
map_data("state") %>%
  left_join(vacc_mar13, by =c("region" = "State")) %>%
  ggplot(mapping = aes(x = long, y = lat,
                       group = group)) +
  geom_polygon(aes(fill = people_vaccinated_per100), color = "black") +
  labs(fill = "People Vacc.\nper 100 pop.") +
  coord_map() + # This scales the longitude and latitude so that the shapes look correct.
  theme_void() + # This theme can give you a really clean look!
  scale_fill_viridis() + # you can change the fill scale for different color schemes.
  labs(title = "Cumulative People Vaccinated per 100 population\nMarch 13, 2021")
```

Cumulative People Vaccinated per 100 population
March 13, 2021


People Vacc.
per 100 pop.
27.5
25.0
22.5
20.0
17.5