




Stay at Home Watch

April 05, 2020



According to Business Insider about a third of the global population is under coronavirus lockdown.

However how many people actually abide by the regulations? Moreover do people voluntarily begin to reduce outdoors activities even without a lockdown?



BUSINESS
INSIDER



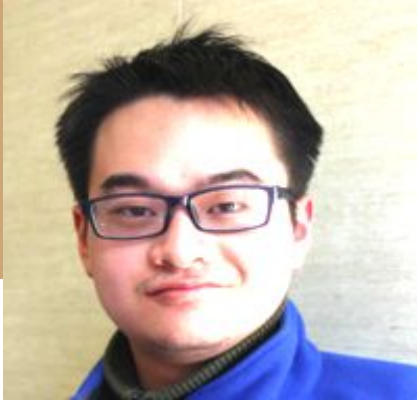
Subscribe

A third of the global population is on coronavirus lockdown — here's our constantly updated list of countries and restrictions

Juliana Kaplan, Lauren Frias and Morgan McFall-Johnsen Apr 3, 2020, 8:31 AM



The Chloe Team



Ying Zhou

Data Scientist at Lowe's
Companies, Inc. USA



Chloe Zhou

Aspiring data scientist



Sophie Kozolan

Financial Data Analyst,
Intel



Noushin Nabavi

Data Scientist at BC
Government, Canada

Our Data vs Corona story

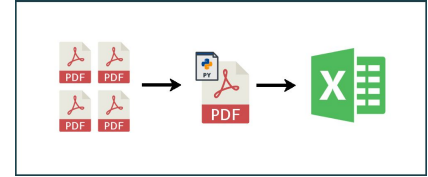


04.04.20

Team brainstorming,
understanding team mate
strengths, discussing data

05.04.20

Data extraction,
transformation and
clustering

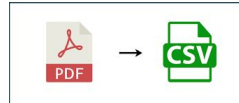


04.04.20

Team formation

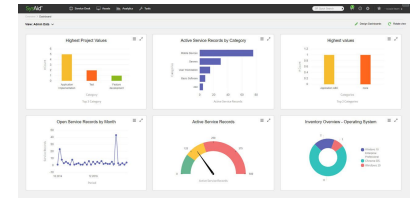
04.04.20

Decision on using Google
Maps data and devising a
strategy for data analytics



05.04.20

Dashboard formation and
presentation



Project repo on Github

mathyingzhou / stay-at-home-watch

Watch 1 Unstar 1 Fork 1

Code Issues 0 Pull requests 0 Actions Projects 1 Wiki Security Insights

Understand Google mobility report

27 commits 2 branches 0 packages 0 releases 2 contributors Apache-2.0


Branch: master New pull request Create new file Upload files Find file Clone or download



Ying Zhou and Ying Zhou Merge branch 'master' of https://github.com/mathyingzhou/stay-at-home... Latest commit 071f2a0 23 minutes ago









code	Merge branch 'master' of https://github.com/mathyingzhou/stay-at-home...	23 minutes ago
data	Fix bugs, remove hardcoded paths	1 hour ago
.gitignore	R code update	1 hour ago
LICENSE	licence to Chloe team	15 hours ago
README.md	Update README.md	14 hours ago
stay-at-home-watch.Rproj	folder reorganization	3 hours ago

<https://github.com/mathyingzhou/stay-at-home-watch>



Project tasks & status

 **mathyingzhou** / **stay-at-home-watch**


 Watch ▾ 1  Unstar


 Code  Issues 0  Pull requests 0  Actions  **Projects 1**  Wiki  Security  Insights


project tasks
Updated 14 seconds ago

 Add cards  Full screen


2 Get the data + ...

X  1. Download and use a package to convert at least one PDF file ...

X  2. Scrape the Google site for data (find pages and download them)

X  3. Loop through 1 and get a .csv file containing data we want


Added by NoushinN

X  data source: ...


<https://www.google.com/covid19/mobility/>

Added by NoushinN

2 Transform data into .csv data tables + ...


 Merge with JHU data (to get lat/long and confirmed cases) ...

Added by NoushinN


X  k-means clustering ...

Added by NoushinN

2 Visualize data (dashboard) + ...

 build web app ...

Added by NoushinN

 build shiny app ...

Added by NoushinN

K-means clustering (n=5)

```
In [145]: centers = kmeans.cluster_centers_
```

```
In [146]: stay_at_home_indices = [sum(list_[:6])-list_[-1] for list_ in centers]
```

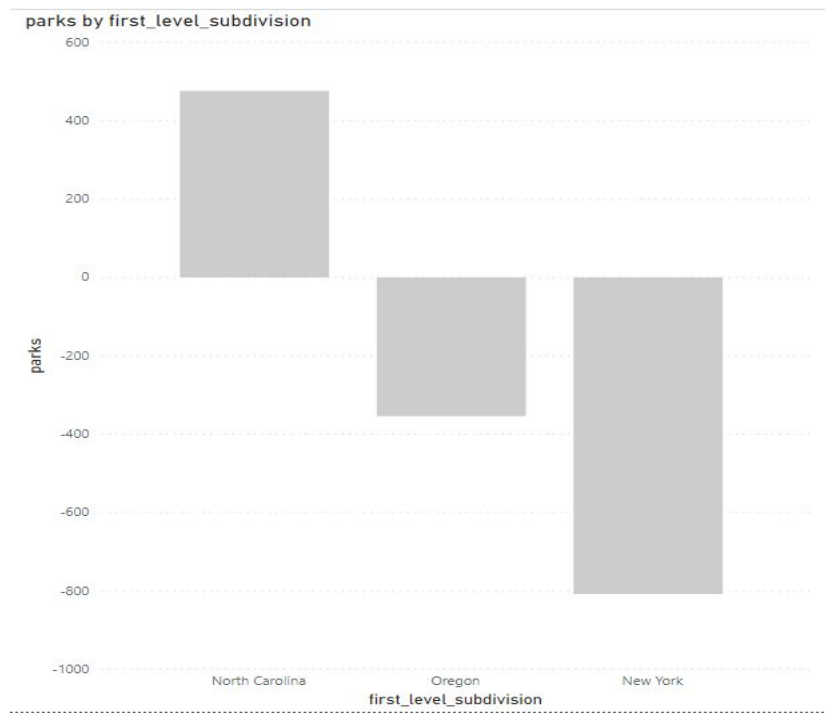
```
In [147]: centers
```

```
Out[147]: array([[ -37.02586207, -15.72988506, -14.30747126, -29.79597701,  
                  -27.12068966,  10.5545977 ],  
                 [-83.02650602, -55.78072289, -66.41686747, -75.5373494 ,  
                  -50.46506024,  19.4626506 ],  
                 [-40.76470588, -15.45098039, 107.23529412, -25.60784314,  
                  -33.47058824,   9.35294118],  
                 [-61.16229117, -33.36754177, -33.60143198, -59.50357995,  
                  -38.10739857,  14.71837709],  
                 [-43.          , -19.52631579,  32.89878543, -39.08906883,  
                  -31.91497976,  10.00404858]])
```

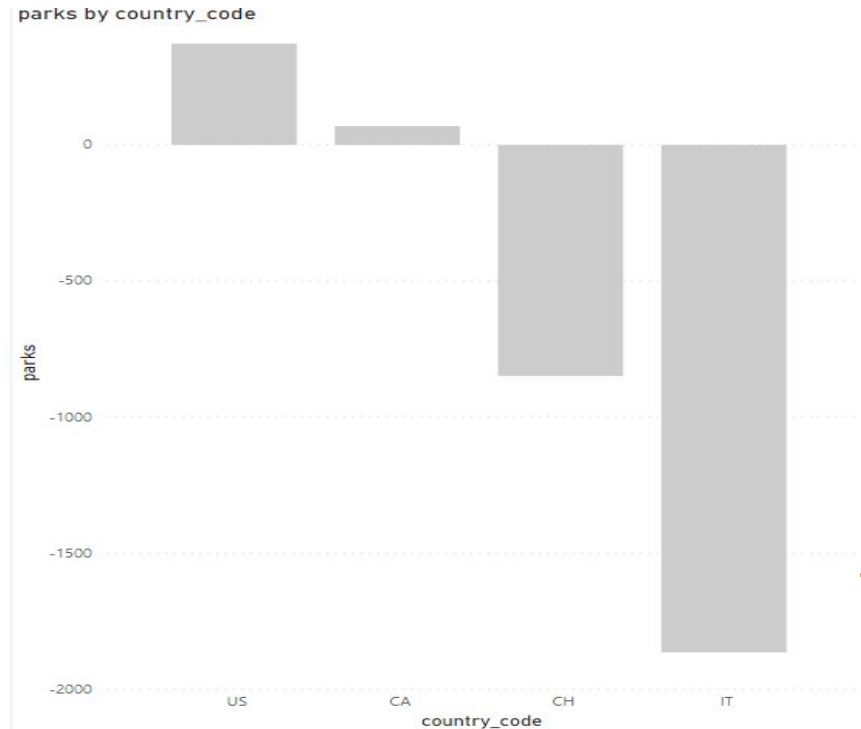
```
In [148]: stay_at_home_indices
```

```
Out[148]: [-123.9798850574715,  
           -331.226506024096,  
           -8.058823529411804,  
           -225.74224343675422,  
           -100.63157894736823]
```

Power BI data visualisation tool



Parks by State



Parks by Country

R Workflow to visualize extracted files

The screenshot displays the RStudio interface with a script editor, environment pane, and console.

Script Editor:

```
1 # declare dependencies
2 if (!exists("setup_sourced")) source(here::here("scripts", "setup.R"))
3
4 #-----
5
6
7 # load data
8 maps_data <- read_csv("data/final_data.csv")
9 glimpse(maps_data)
10
11 # clean out the 'none' post-fixes in the jurisdiction field
12 maps <- maps_data %>%
13   mutate(c = str_replace(jurisdiction, "-None-None", "")) %>%
14   mutate(country = str_replace(c, "-None", ""))
15
16 maps <- maps[, -c(1,2)]
17 maps <- maps[, -6]
18
19 canada <- maps %>%
20   filter(str_detect(maps$country, "CA"))
21
```

Environment Pane:

Global Environment -

Data

- canada 10 obs. of 6 variables
- final_data 1530 obs. of 9 variables
- g List of 9
- maps 1530 obs. of 6 variables
- maps_data 1480 obs. of 9 variables

Values

- .Last.value NULL (empty)
- libraries chr [1:8] "tidyverse" "data.table" "here" "table..."

Files Pane:

Home > stay-at-home-watch > code

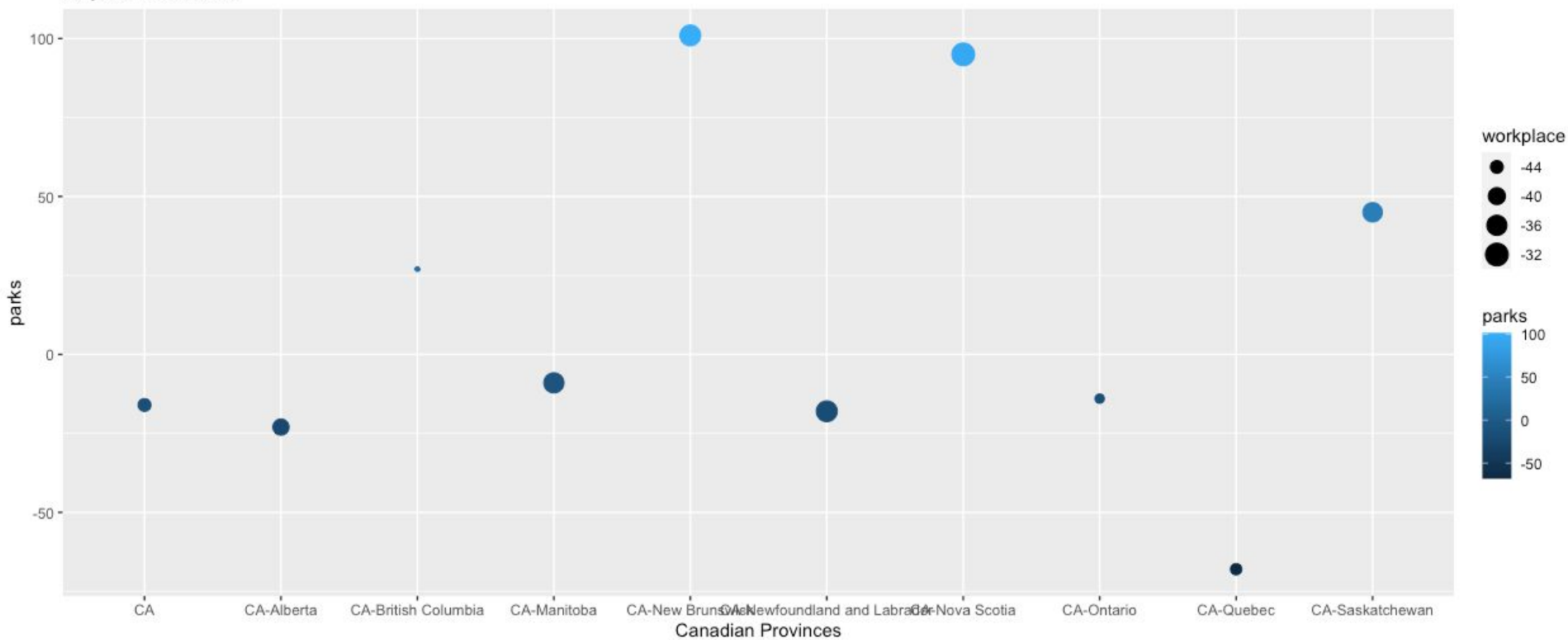
Name	Size	Modified
..		
data_cleanup_merge.R	947 B	Apr 5, 2020, 11:50 AM
data_extraction.py	7.1 KB	Apr 5, 2020, 11:50 AM
setup.R	245 B	Apr 5, 2020, 10:23 AM

Console:

```
~/stay-at-home-watch/ ↵
cols(
  X1 = col_double(),
  jurisdiction = col_character(),
  retail_recreation = col_double(),
  grocery_pharmacy = col_double(),
  parks = col_double(),
  transit_stations = col_double(),
  workplace = col_double(),
  residential = col_double(),
  cluster = col_double()
)
Warning message:
Missing column names filled in: 'X1' [1]
> View(maps_data)
```

Park mobility scatterplot

Stay-at-Home-Watch



Source: Google Maps

Park visits in Canadian provinces

Things to do

- Obtain more data
 - Merge with the JHU dataset to get latitudes and longitudes, and COVID confirmed cases in time
- Use the results to forecast the number of cases and deaths based on mobility
- Develop a React app and a shiny dashboard to make visualizations interactive

Our shiny dashboards and webapps are coming

Thank you for listening

Create demographic maps with information from the 2010 US Census.

Choose a variable to display

Percent White ▼

Range of interest:

0 100

0 10 20 30 40 50 60 70 80 90 100

