April 2020

Shefali Emmanuel Final Data Science Project:

OBTAINING DATA

Source 1 - AWS US Covd19 DataSet https://dj2taa9i652rf.cloudfront.net

```
[/data/FinalProject]$ curl https://covid19-lake.s3.us-east-2.amazonaws.com/static-datasets/csv/state-abv/states_abv.csv > stateABV.csv
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100   665  100   665    0     0   1878      0 --:--:-- --:--:-- --:--:--  1878
[/data/FinalProject]$ ls
stateABV.csv
```

Source 2 - NY Times Github
https://github.com/nytimes/covid-19-data/blob/master/us-states.csv

```
[/data/FinalProject]$ curl https://raw.githubusercontent.com/nytimes/covid-19-data/master/us-states.csv > usStates.csv
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 64445  100 64445    0     0   184k      0 --:--:-- --:--:-- --:--:--  184k
[/data/FinalProject]$ ls
stateABV.csv  usStates.csv
```

April 2020

SCRUBBING DATA

Technique 1: Deleting Uninteresting Columns

I removed the fips column as it has no use to me from the usStates.csv file.

```
[[/data/FinalProject]$ csvcut -c date,state,cases,deaths usStates.csv > newUSStates.csv
[[/data/FinalProject]$ ls
 newUSStates.csv  stateABV.csv  usStates.csv
```

Technique 2: Join Multiple CSV Files Horizontally on State Column

```
[[/data/FinalProject]$ csvjoin -c state newUSStates.csv stateABV.csv > finalDataset.csv
```

```
[[/data/FinalProject]$ csvjoin -c state newUSStates.csv stateABV.csv |csvlook
|       date | state                |   cases | deaths | abbreviation |
| ---------- | -------------------- | ------- | ------ | ------------ |
| 2020-01-21 | Washington           |       1 |      0 | WA           |
| 2020-01-22 | Washington           |       1 |      0 | WA           |
| 2020-01-23 | Washington           |       1 |      0 | WA           |
| 2020-01-24 | Illinois             |       1 |      0 | IL           |
| 2020-01-24 | Washington           |       1 |      0 | WA           |
| 2020-01-25 | California           |       1 |      0 | CA           |
| 2020-01-25 | Illinois             |       1 |      0 | IL           |
| 2020-01-25 | Washington           |       1 |      0 | WA           |
```

Technique 3: Remove all '-' from the date column

I did this inside of a Juypter notebook.

In [25]:
```
text = open("finalDataset.csv", "r")
text = ''.join([i for i in text]) \
    .replace("-", "")
x = open("finalDataset.csv","w")
x.writelines(text)
x.close()

df.head()
```

Out[25]:

	date	state	cases	deaths	abbreviation
0	20200121	Washington	1	0	WA
1	20200122	Washington	1	0	WA
2	20200123	Washington	1	0	WA
3	20200124	Illinois	1	0	IL
4	20200124	Washington	1	0	WA

April 2020

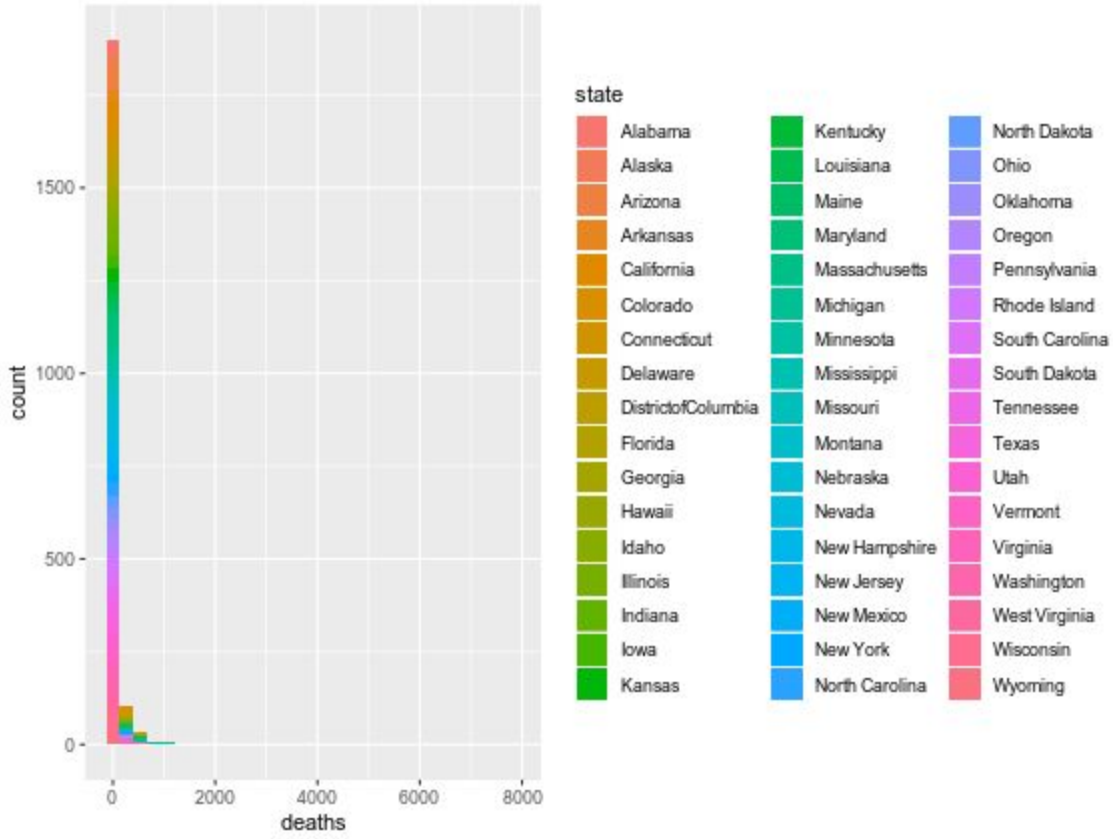
EXPLORING DATA

Technique 1: Derive statistics from the data by utilizing CSVSTAT

```
[[/data/FinalProject]$ csvstat finalDataset.csv --unique
  1. date: 81
  2. state: 51
  3. cases: 980
  4. deaths: 264
  5. abbreviation: 51
[[/data/FinalProject]$ csvstat finalDataset.csv --nulls
  1. date: False
  2. state: False
  3. cases: False
  4. deaths: False
  5. abbreviation: False
[[/data/FinalProject]$ csvstat finalDataset.csv --freq
  1. date: { "2020-03-17": 51, "2020-03-18": 51, "2020-03-19": 51, "2020-03-20": 51, "2020-03-21": 51 }
  2. state: { "Washington": 81, "Illinois": 78, "California": 77, "Arizona": 76, "Massachusetts": 70 }
  3. cases: { "1": 214, "2": 107, "3": 32, "6": 31, "4": 31 }
  4. deaths: { "0": 911, "1": 134, "2": 85, "3": 67, "5": 46 }
  5. abbreviation: { "WA": 81, "IL": 78, "CA": 77, "AZ": 76, "MA": 70 }
```

Technique 2: Create interesting visualization

```
[[/data/FinalProject]$ < finalDataset.csv Rio -ge 'g+geom_histogram(aes(deaths, fill=state))' > deathsNstates.png
 /usr/bin/Rio: line 128: warning: command substitution: ignored null byte in input
```



Please look at 'Lorenz.ipynb' that is also in this repository for more information.