

Happy holiday! Remember to take care of yourself and your loved ones!

- `using Pkg`

- `using Interact`

```
url =  
"https://raw.githubusercontent.com/CSSEGISandData/COVID-19/master/csse_covid_19_data/  
• url = "https://raw.githubusercontent.com/CSSEGISandData/COVID-  
19/master/csse_covid_19_data/csse_covid_19_time_series/time_series_covid19_confirmed_global.csv"
```

String

- `typeof(url)`

"covid_data.csv"

- `download(url, "covid_data.csv")`

["Fun notes.jl", "Groundbreaking science.jl", "Tiny notebook.jl", "Wonderful notebook.jl"]

- `readdir()`

- `using CSV`

- `using DataFrames`

| | Province/State | Country/Region | Lat | Long | 1/2 |
|-----|--------------------------------|-----------------------|----------|----------|-----|
| 1 | missing | "Afghanistan" | 33.9391 | 67.71 | 0 |
| 2 | missing | "Albania" | 41.1533 | 20.1683 | 0 |
| 3 | missing | "Algeria" | 28.0339 | 1.6596 | 0 |
| 4 | missing | "Andorra" | 42.5063 | 1.5218 | 0 |
| 5 | missing | "Angola" | -11.2027 | 17.8739 | 0 |
| 6 | missing | "Antigua and Barbuda" | 17.0608 | -61.7964 | 0 |
| 7 | missing | "Argentina" | -38.4161 | -63.6167 | 0 |
| 8 | missing | "Armenia" | 40.0691 | 45.0382 | 0 |
| 9 | "Australian Capital Territory" | "Australia" | -35.4735 | 149.012 | 0 |
| 10 | "New South Wales" | "Australia" | -33.8688 | 151.209 | 0 |
| | more | | | | |
| 280 | missing | "Zimbabwe" | -19.0154 | 29.1549 | 0 |

```
• CSV.read("covid_data.csv", DataFrame)
```

```
• data = CSV.read("covid_data.csv", DataFrame);
```

| | Province/State | Country/Region | Lat | Long | 1/2 |
|------|--------------------------------|-----------------------|----------|----------|-----|
| 1 | missing | "Afghanistan" | 33.9391 | 67.71 | 0 |
| 2 | missing | "Albania" | 41.1533 | 20.1683 | 0 |
| 3 | missing | "Algeria" | 28.0339 | 1.6596 | 0 |
| 4 | missing | "Andorra" | 42.5063 | 1.5213 | 0 |
| 5 | missing | "Angola" | -11.2027 | 17.8739 | 0 |
| 6 | missing | "Antigua and Barbuda" | 17.0608 | -61.7964 | 0 |
| 7 | missing | "Argentina" | -38.4161 | -63.6167 | 0 |
| 8 | missing | "Armenia" | 40.0691 | 45.0382 | 0 |
| 9 | "Australian Capital Territory" | "Australia" | -35.4735 | 149.012 | 0 |
| 10 | "New South Wales" | "Australia" | -33.8688 | 151.209 | 0 |
| more | | | | | |
| 280 | missing | "Zimbabwe" | -19.0154 | 29.1549 | 0 |

- [data](#)

DataFrame

- `typeof(data)`

data_2 =

| | province | country | Lat | Long | 1/2 |
|------|--------------------------------|-----------------------|----------|----------|-----|
| 1 | missing | "Afghanistan" | 33.9391 | 67.71 | 0 |
| 2 | missing | "Albania" | 41.1533 | 20.1683 | 0 |
| 3 | missing | "Algeria" | 28.0339 | 1.6596 | 0 |
| 4 | missing | "Andorra" | 42.5063 | 1.5218 | 0 |
| 5 | missing | "Angola" | -11.2027 | 17.8739 | 0 |
| 6 | missing | "Antigua and Barbuda" | 17.0608 | -61.7964 | 0 |
| 7 | missing | "Argentina" | -38.4161 | -63.6167 | 0 |
| 8 | missing | "Armenia" | 40.0691 | 45.0382 | 0 |
| 9 | "Australian Capital Territory" | "Australia" | -35.4735 | 149.012 | 0 |
| 10 | "New South Wales" | "Australia" | -33.8688 | 151.209 | 0 |
| more | | | | | |
| 280 | missing | "Zimbabwe" | -19.0154 | 29.1549 | 0 |

```
data_2 = rename(data, 1 => "province", 2 => "country" )
```

countries =

```
["Afghanistan", "Albania", "Algeria", "Andorra", "Angola", "Antigua and Barbuda", "A
```

```
countries = collect(data[:,2])
```

unique_countries =

```
["Afghanistan", "Albania", "Algeria", "Andorra", "Angola", "Antigua and Barbuda", "A
```

```
unique_countries = unique(countries)
```

```
using WebIO
```

```
@manipulate for i in 1:length(countries)
    countries[i]
end
```

(::Base.Fix2{typeof(startswith), String}) (generic function with 1 method)

```
startswith("A")
```

```
A_countries = [startswith(country, "A") for country in countries];
```

| | Province/State | Country/Region | Lat | Long | 1/22 |
|----|--------------------------------|-----------------------|----------|----------|------|
| 1 | missing | "Afghanistan" | 33.9391 | 67.71 | 0 |
| 2 | missing | "Albania" | 41.1533 | 20.1683 | 0 |
| 3 | missing | "Algeria" | 28.0339 | 1.6596 | 0 |
| 4 | missing | "Andorra" | 42.5063 | 1.5218 | 0 |
| 5 | missing | "Angola" | -11.2027 | 17.8739 | 0 |
| 6 | missing | "Antigua and Barbuda" | 17.0608 | -61.7964 | 0 |
| 7 | missing | "Argentina" | -38.4161 | -63.6167 | 0 |
| 8 | missing | "Armenia" | 40.0691 | 45.0382 | 0 |
| 9 | "Australian Capital Territory" | "Australia" | -35.4735 | 149.012 | 0 |
| 10 | "New South Wales" | "Australia" | -33.8688 | 151.209 | 0 |
| | more | | | | |
| 18 | missing | "Azerbaijan" | 40.1431 | 47.5769 | 0 |

```
data[A_countries, :]
```

```
BitVector: [false, false, false, false, false, false, false, false, true, true, true,
```

```
countries .== "Australia"
```

```
AUS_row = 9
```

```
AUS_row = findfirst(countries .== "Australia")
```

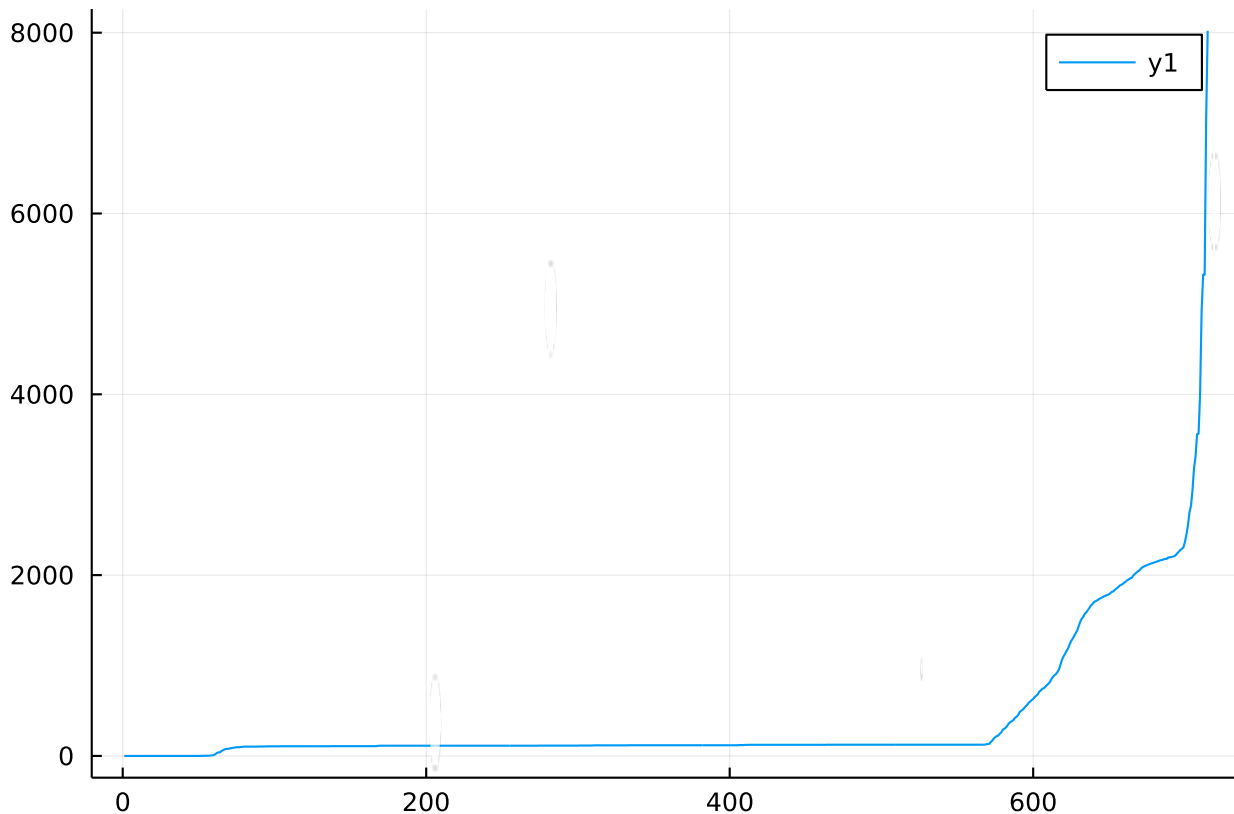
```
AUS_data_row =  
DataFrameRow (719 columns)
```

| | Province/State | Country/Region | Lat | Long | 1/22/20 | 1/23/20 | 1/24/20 |
|---|------------------------------------|----------------|----------|----------|---------|---------|---------|
| | String63 | String63 | Float64? | Float64? | Int64 | Int64 | Int64 |
| 9 | Australian Capital Territory | Australia | -35.4735 | 149.012 | 0 | 0 | 0 |

```
AUS_data_row = data[AUS_row, :]
```

[illegible]

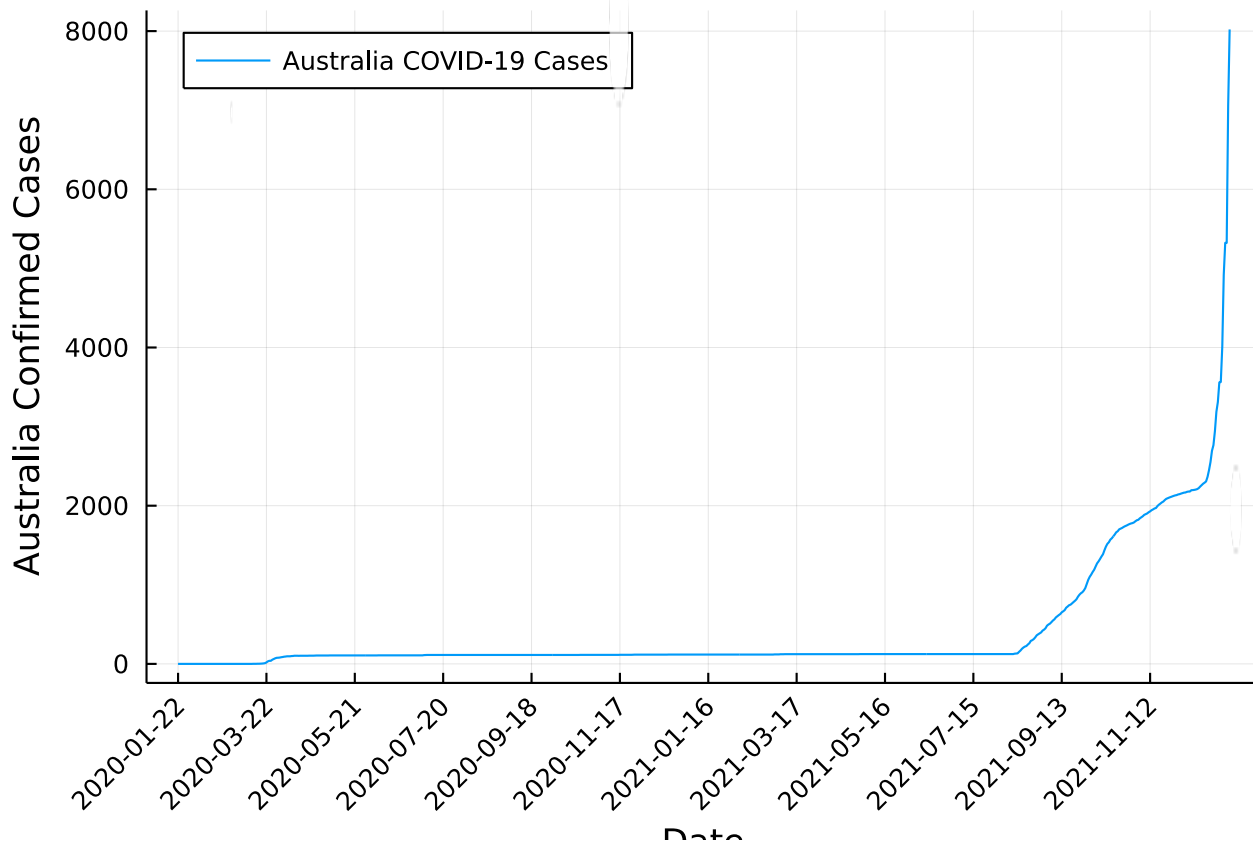
- using **Plots**



["1/22/20", "1/23/20", "1/24/20", "1/25/20", "1/26/20", "1/27/20", "1/28/20", "1/29/20", "1/30/20", "1/31/20", "2/1/20", "2/2/20", "2/3/20", "2/4/20", "2/5/20", "2/6/20", "2/7/20", "2/8/20", "2/9/20", "2/10/20", "2/11/20", "2/12/20", "2/13/20", "2/14/20", "2/15/20", "2/16/20", "2/17/20", "2/18/20", "2/19/20", "2/20/20", "2/21/20", "2/22/20", "2/23/20", "2/24/20", "2/25/20", "2/26/20", "2/27/20", "2/28/20", "2/29/20", "2/30/20", "3/1/20", "3/2/20", "3/3/20", "3/4/20", "3/5/20", "3/6/20", "3/7/20", "3/8/20", "3/9/20", "3/10/20", "3/11/20", "3/12/20", "3/13/20", "3/14/20", "3/15/20", "3/16/20", "3/17/20", "3/18/20", "3/19/20", "3/20/20", "3/21/20", "3/22/20", "3/23/20", "3/24/20", "3/25/20", "3/26/20", "3/27/20", "3/28/20", "3/29/20", "3/30/20", "3/31/20", "4/1/20", "4/2/20", "4/3/20", "4/4/20", "4/5/20", "4/6/20", "4/7/20", "4/8/20", "4/9/20", "4/10/20", "4/11/20", "4/12/20", "4/13/20", "4/14/20", "4/15/20", "4/16/20", "4/17/20", "4/18/20", "4/19/20", "4/20/20", "4/21/20", "4/22/20", "4/23/20", "4/24/20", "4/25/20", "4/26/20", "4/27/20", "4/28/20", "4/29/20", "4/30/20", "5/1/20", "5/2/20", "5/3/20", "5/4/20", "5/5/20", "5/6/20", "5/7/20", "5/8/20", "5/9/20", "5/10/20", "5/11/20", "5/12/20", "5/13/20", "5/14/20", "5/15/20", "5/16/20", "5/17/20", "5/18/20", "5/19/20", "5/20/20", "5/21/20", "5/22/20", "5/23/20", "5/24/20", "5/25/20", "5/26/20", "5/27/20", "5/28/20", "5/29/20", "5/30/20", "5/31/20", "6/1/20", "6/2/20", "6/3/20", "6/4/20", "6/5/20", "6/6/20", "6/7/20", "6/8/20", "6/9/20", "6/10/20", "6/11/20", "6/12/20", "6/13/20", "6/14/20", "6/15/20", "6/16/20", "6/17/20", "6/18/20", "6/19/20", "6/20/20", "6/21/20", "6/22/20", "6/23/20", "6/24/20", "6/25/20", "6/26/20", "6/27/20", "6/28/20", "6/29/20", "6/30/20", "7/1/20", "7/2/20", "7/3/20", "7/4/20", "7/5/20", "7/6/20", "7/7/20", "7/8/20", "7/9/20", "7/10/20", "7/11/20", "7/12/20", "7/13/20", "7/14/20", "7/15/20", "7/16/20", "7/17/20", "7/18/20", "7/19/20", "7/20/20", "7/21/20", "7/22/20", "7/23/20", "7/24/20", "7/25/20", "7/26/20", "7/27/20", "7/28/20", "7/29/20", "7/30/20", "7/31/20", "8/1/20", "8/2/20", "8/3/20", "8/4/20", "8/5/20", "8/6/20", "8/7/20", "8/8/20", "8/9/20", "8/10/20", "8/11/20", "8/12/20", "8/13/20", "8/14/20", "8/15/20", "8/16/20", "8/17/20", "8/18/20", "8/19/20", "8/20/20", "8/21/20", "8/22/20", "8/23/20", "8/24/20", "8/25/20", "8/26/20", "8/27/20", "8/28/20", "8/29/20", "8/30/20", "8/31/20", "9/1/20", "9/2/20", "9/3/20", "9/4/20", "9/5/20", "9/6/20", "9/7/20", "9/8/20", "9/9/20", "9/10/20", "9/11/20", "9/12/20", "9/13/20", "9/14/20", "9/15/20", "9/16/20", "9/17/20", "9/18/20", "9/19/20", "9/20/20", "9/21/20", "9/22/20", "9/23/20", "9/24/20", "9/25/20", "9/26/20", "9/27/20", "9/28/20", "9/29/20", "9/30/20", "10/1/20", "10/2/20", "10/3/20", "10/4/20", "10/5/20", "10/6/20", "10/7/20", "10/8/20", "10/9/20", "10/10/20", "10/11/20", "10/12/20", "10/13/20", "10/14/20", "10/15/20", "10/16/20", "10/17/20", "10/18/20", "10/19/20", "10/20/20", "10/21/20", "10/22/20", "10/23/20", "10/24/20", "10/25/20", "10/26/20", "10/27/20", "10/28/20", "10/29/20", "10/30/20", "10/31/20", "11/1/20", "11/2/20", "11/3/20", "11/4/20", "11/5/20", "11/6/20", "11/7/20", "11/8/20", "11/9/20", "11/10/20", "11/11/20", "11/12/20", "11/13/20", "11/14/20", "11/15/20", "11/16/20", "11/17/20", "11/18/20", "11/19/20", "11/20/20", "11/21/20", "11/22/20", "11/23/20", "11/24/20", "11/25/20", "11/26/20", "11/27/20", "11/28/20", "11/29/20", "11/30/20", "12/1/20", "12/2/20", "12/3/20", "12/4/20", "12/5/20", "12/6/20", "12/7/20", "12/8/20", "12/9/20", "12/10/20", "12/11/20", "12/12/20", "12/13/20", "12/14/20", "12/15/20", "12/16/20", "12/17/20", "12/18/20", "12/19/20", "12/20/20", "12/21/20", "12/22/20", "12/23/20", "12/24/20", "12/25/20", "12/26/20", "12/27/20", "12/28/20", "12/29/20", "12/30/20", "12/31/20"]

- format = Dates.DateFormat("m/d/Y")

```
• dates = parse.(Date, date_strings, format) + Year(2000);  
  
• plot(dates, AUS_data, xticks=dates[1:60:end], xrotation=45, leg=:topleft,  
label="Australia COVID-19 Cases");  
  
• xlabel!("Date");
```



```
• ylabel!("Australia Confirmed Cases")
```