COVID-19 STUDY

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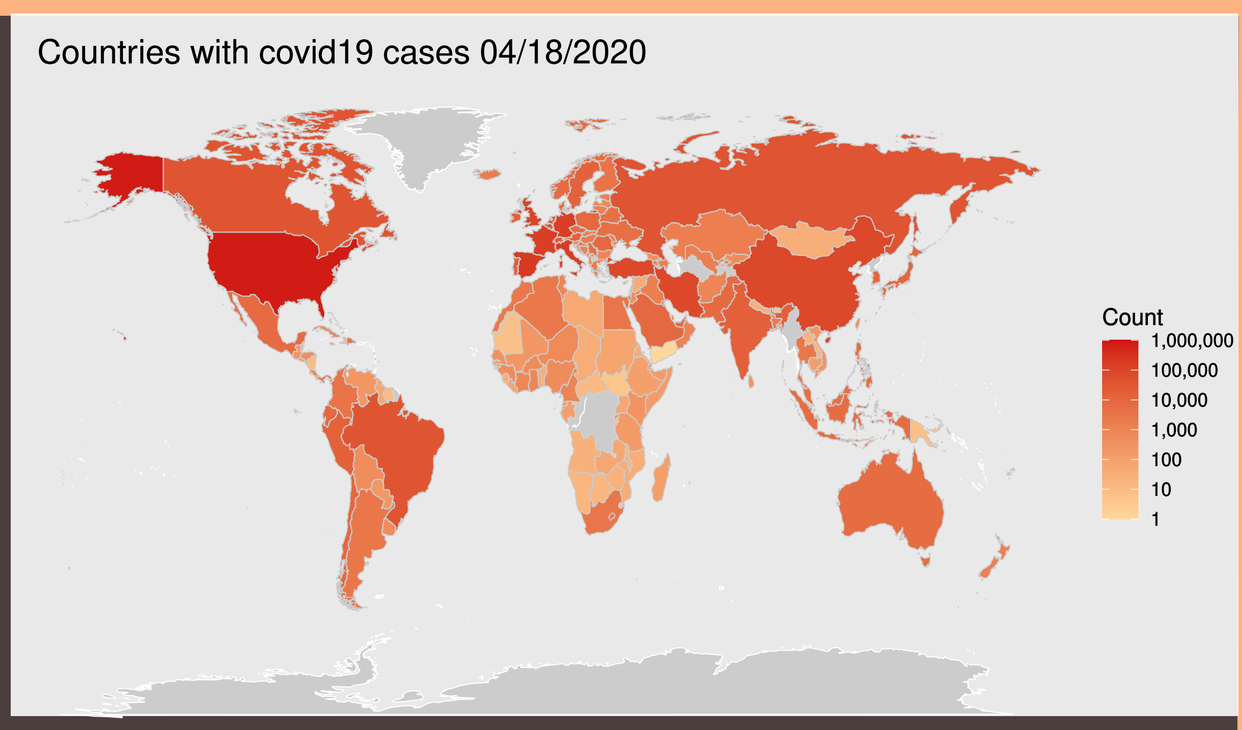
One of the most attention-catching thing right now is the coronavirus disease originated from Wuhan China. As the virus keep spreading,the number goes up. When would it stop?

In 2020 March 11, the World Health Organization had declared COVID-19 outbreak a pandemic. Director-General Tedros Adhanom Ghebreyesus said the situation will worsen.

"We expect to see the number of cases, the number of deaths, and the number of affected countries climb even higher"

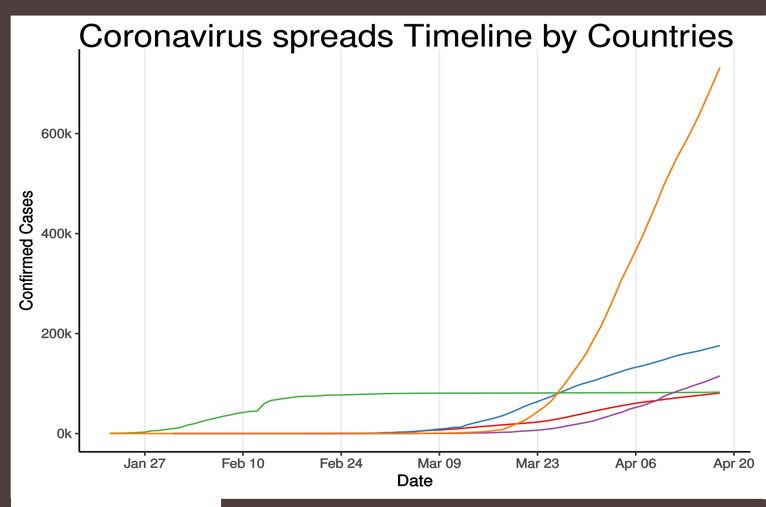


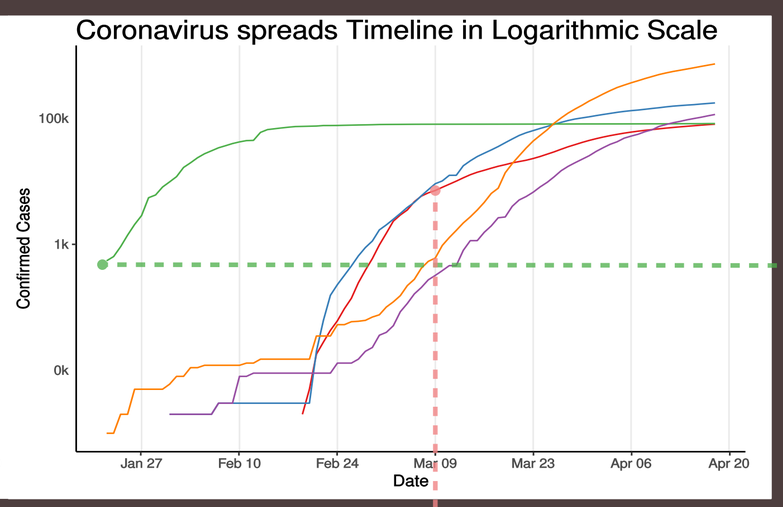
Data Summary

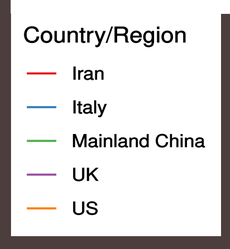
This dataset from Kuggle is provided by John Hopkins University. Data sources: WHO, CDC, ECDC, NHC, DXY, 1point3acres, Worldometers.info, BNO, the COVID Tracking Project (testing and hospitalizations), state and national government health departments, and local media reports.

The dataset has 5 table, information includes number of confirmed cases in a city/country, by date. A dataset of patients who was comfirmed with covid-19, with their age, gender, location, and etc.

WHAT'S THE SPREAD NOW ?





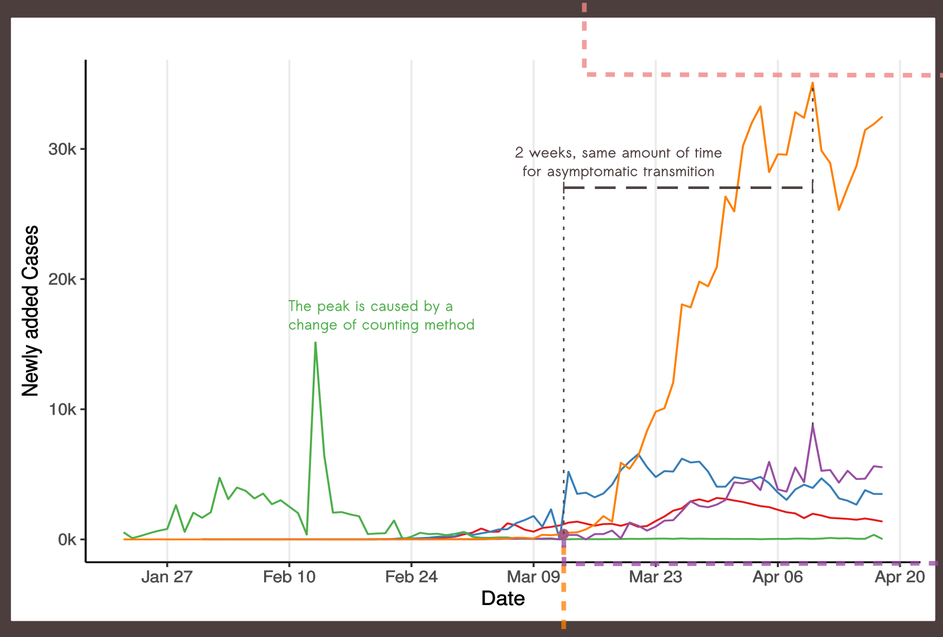


Here is a graph of coronavirus spread in the five countries that have a large number of cases. We can see the number have been growing close to an expernansion way.

A better way to display expernasion growth is to plot the graph in logrithmic scale. Here we can see Iran and Italy have a steeper trajectory than US and UK. Although US have more infected cases at the end

Growth Rate

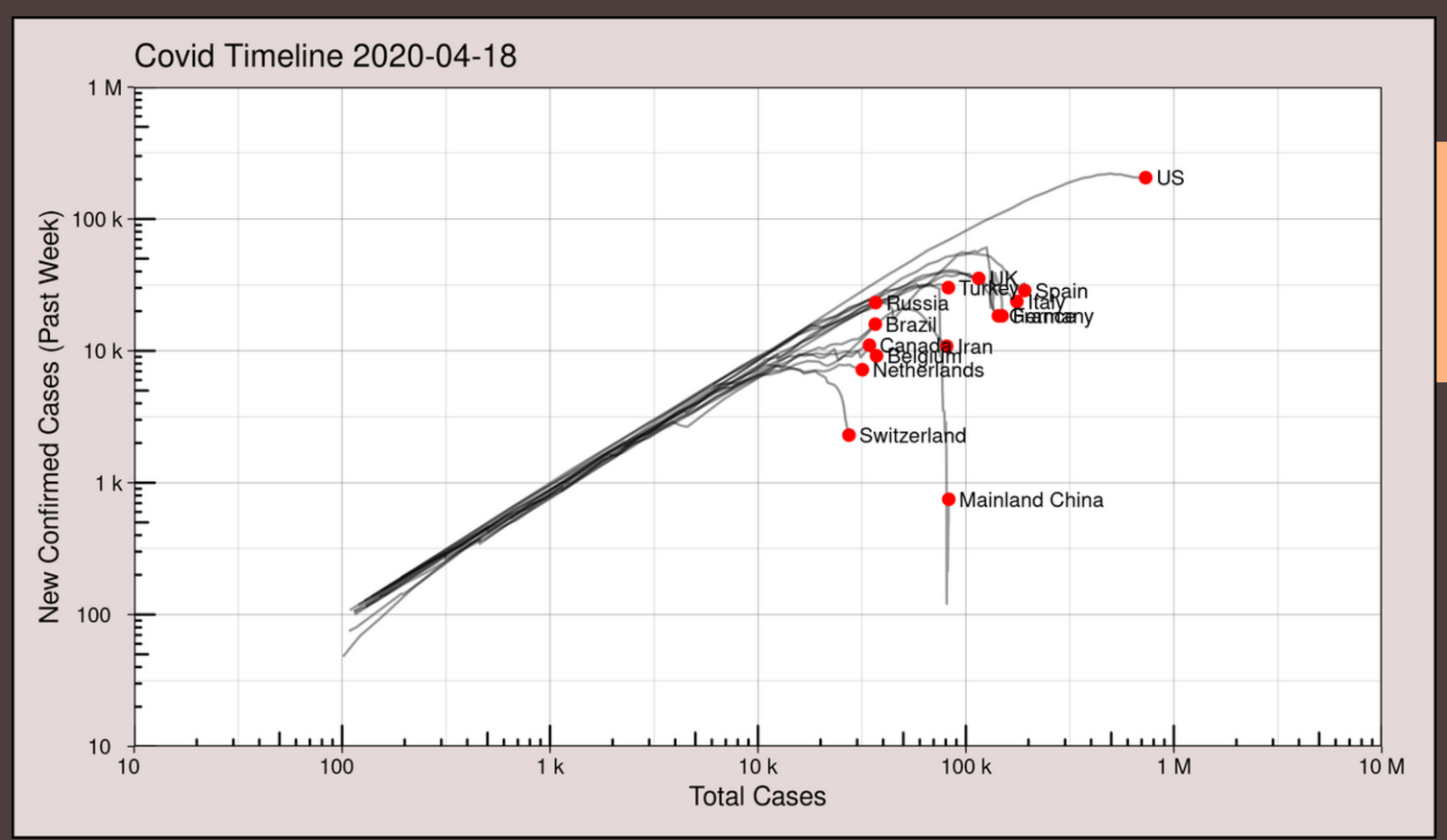
Here is a graph of the growth rate. This graph is important because it shows the new infected cases, and this could be a better measure on when we should stop staying at home. In this graph there is a wired peak on the line of cases from Mainland China. The reason was the offcial in China have changed the counting method. Becuase the lack of testing ability, not all the people are being tested despite having multiple symptoms of the virus.



WHEN CAN THE QUARANTINE END?

After some research I have come across a more accurate way to display the trajectory of the spread, Total cases vs new added cases in past week. I used past week because the data are more stable and can be understand much easier, without this smoothing techneic, there will be lost of outlire from event such as changing counting method etc.

According to WHO each infected people can potential infectes multiple people, between 1.5 to 3.5. This concept in epidemiology are called R0. And this is an import for handling if we should be self-isolating or free to go outside, and as well prdict how many petential cases are coming in the future. In the animation below, the closer to the buttom right cornor means a lower R0 number and the closer to the top left cornor a higher R0 number.



DEC

31 China Alerts WHO on first case

JAN

11 China Announces First Death

23 China Announces Wuhan Lockdown

FEB

28 Worst Stock Market Crash Since 2008

MAR

09 Italy Nationwide Lockdown

11 WHO Announce Global Pandemic

13 White House Declears National Emergency

23 UK Announced Lockdown

States issue stay home orders

APR

07 First Day No Covid Death in China

REFERENCES

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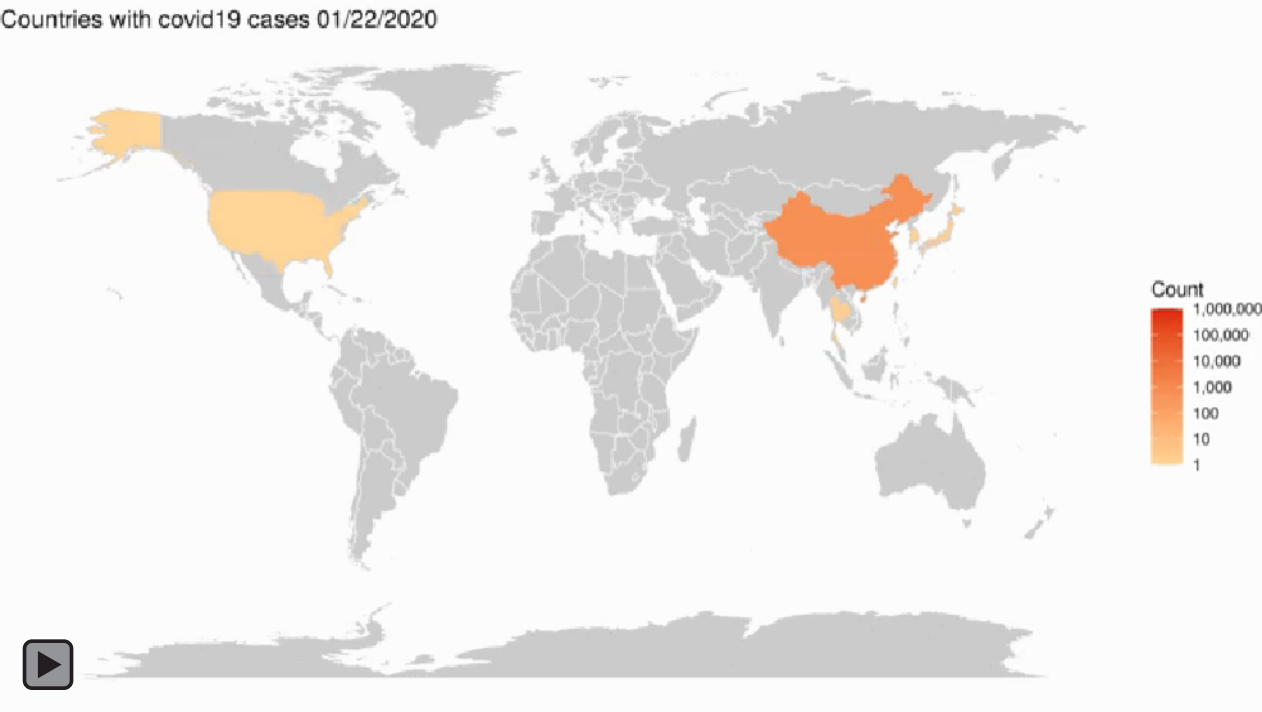
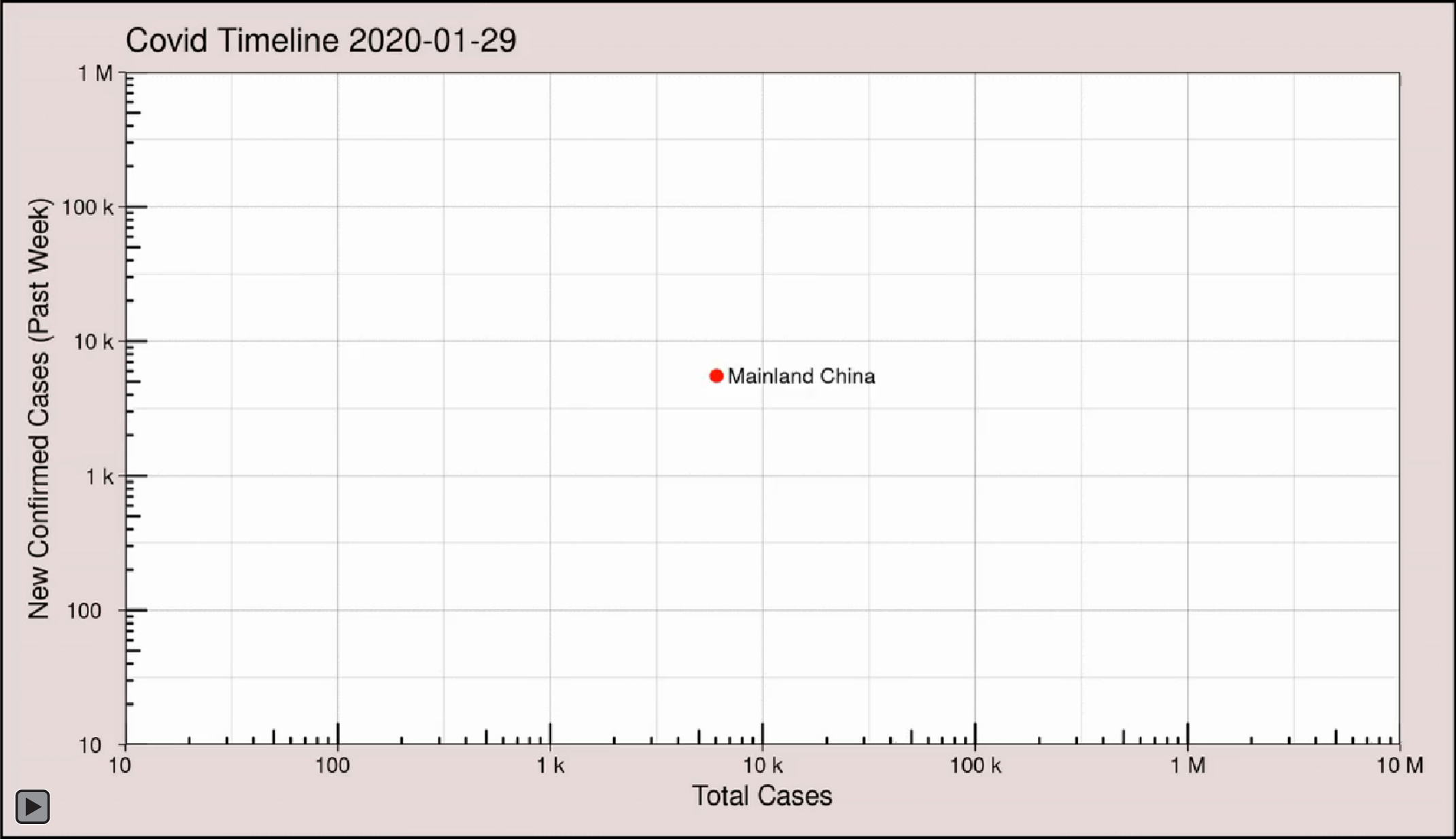

Countries with covid19 cases 01/22/2020
Count
1,000,000
100,000
10,000
1,000
100
10
1


Covid Timeline 2020-01-29
1 M
100 k
10 k
1 k
100
10
New Confirmed Cases (Past Week)
Mainland China
10
100
1 k
10 k
100 k
1 M
10 M
Total Cases