Corona Analysis

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Download data

Covid-19 data

Data were downloaded from the github repository of the Johns Hopkins University. These are the same data, from which the famous GIS world map is created. See: https://github.com/CSSEGISandData/COVID-19.

Newest date

```
## [1] "2020-05-27"
```

Population data

Population data taken from wikipedia: https://en.wikipedia.org/wiki/List_of_countries_and_dependencies_by_population. Most numbers are from national or UN annual projections.

Newest projection:

```
## [1] "2020-07-01"
```

Selected countries

The following countries were set to be included: Germany, Switzerland, Hong Kong, Singapore, Sweden, Austria, Greece. Additionally, 23 countries with the highest number of confirmed cases were added.

Actual numbers

The number of confirmed and death cases for each day.

Hong Kong and Singapore both show two phases of linear growth. South Korea first had an exponential growth and then turned into linear growth.
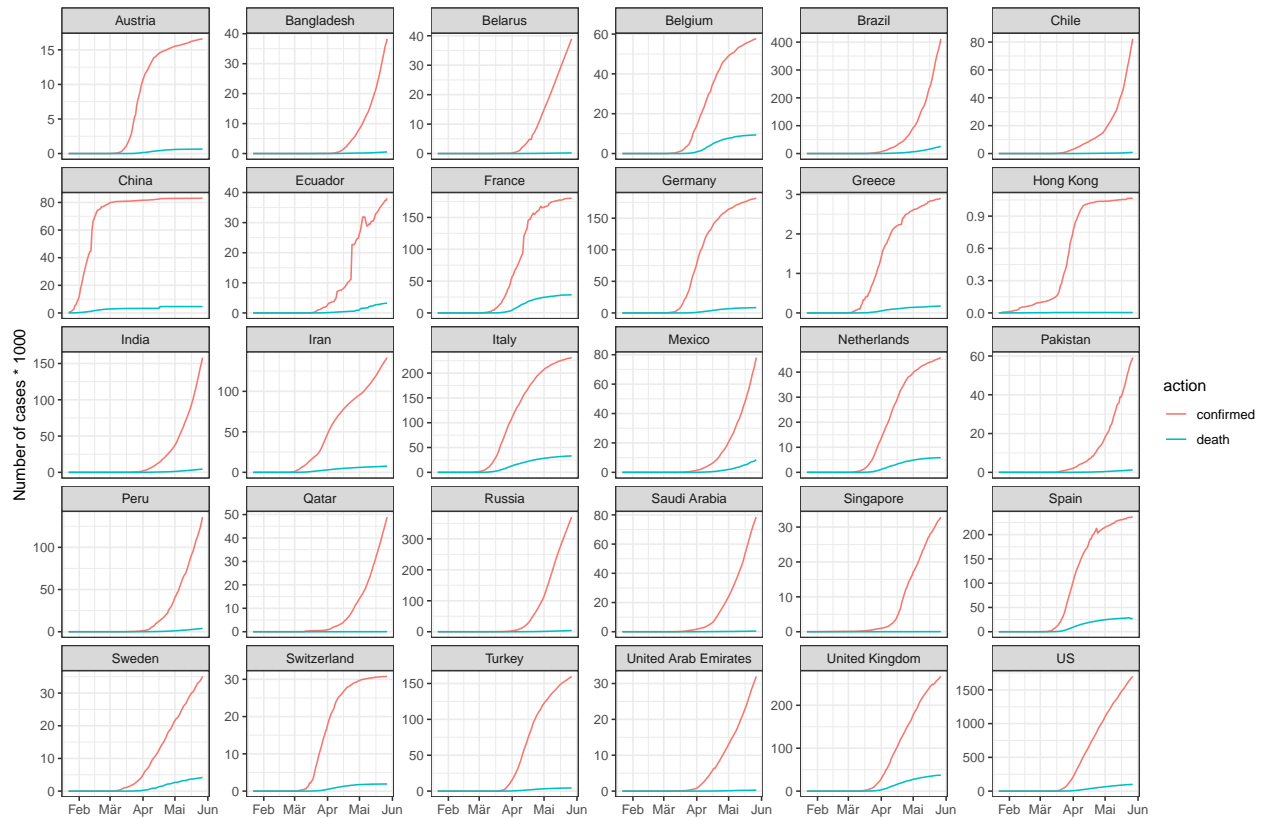
Ratio of death to infected

Simply the ratio of reported deaths divided by number of confirmed cases for each day. Interesting to see that this ratio increases i most countries. A particularly sharp increase can be observed for countries that start to struggle: Italy, Spain, and Belgium. However, this calculation is probably too simple, as it does not take account of recovered cases.

Note, that in Italy last points are not in plot anymore.
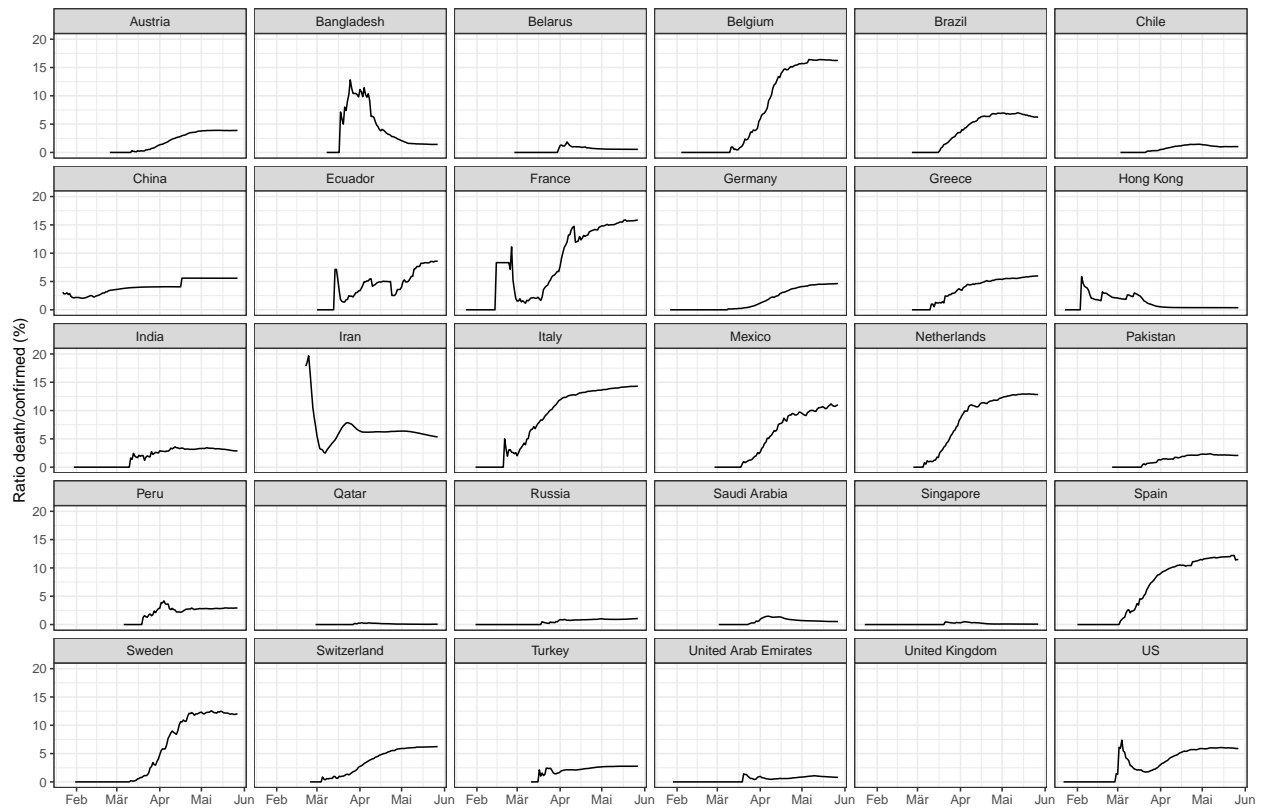
New cases

Simply the daily increase of confirmed cases.

Relative increase per day

A relative increase of e.g. b=1.2 indicates that the number of confirmed cases increases by 20% in one day, e.g. from 1000 to 1200. This number (b) can be related to the number of days needed for doubling the number of confirmed cases by $b^x = 2$, with x as the number of days. The following shows the relation of b to x. The sometimes mentioned aim of a doubling time of ten days thus corresponds to $b \approx 1.07$.

b	NumberOfDays
1.05	14.21
1.10	7.27
1.15	4.96
1.20	3.80
1.25	3.11
1.30	2.64
1.35	2.31
1.40	2.06

While the relative increase was at around $b \approx 1.3$ to $b \approx 1.4$ (meaning a doubling of confirmed cases every 2 to 2.6 days), this rate has dropped to around $b \approx 1.1$ in most countries. This might be most probably due to the imposed measures.
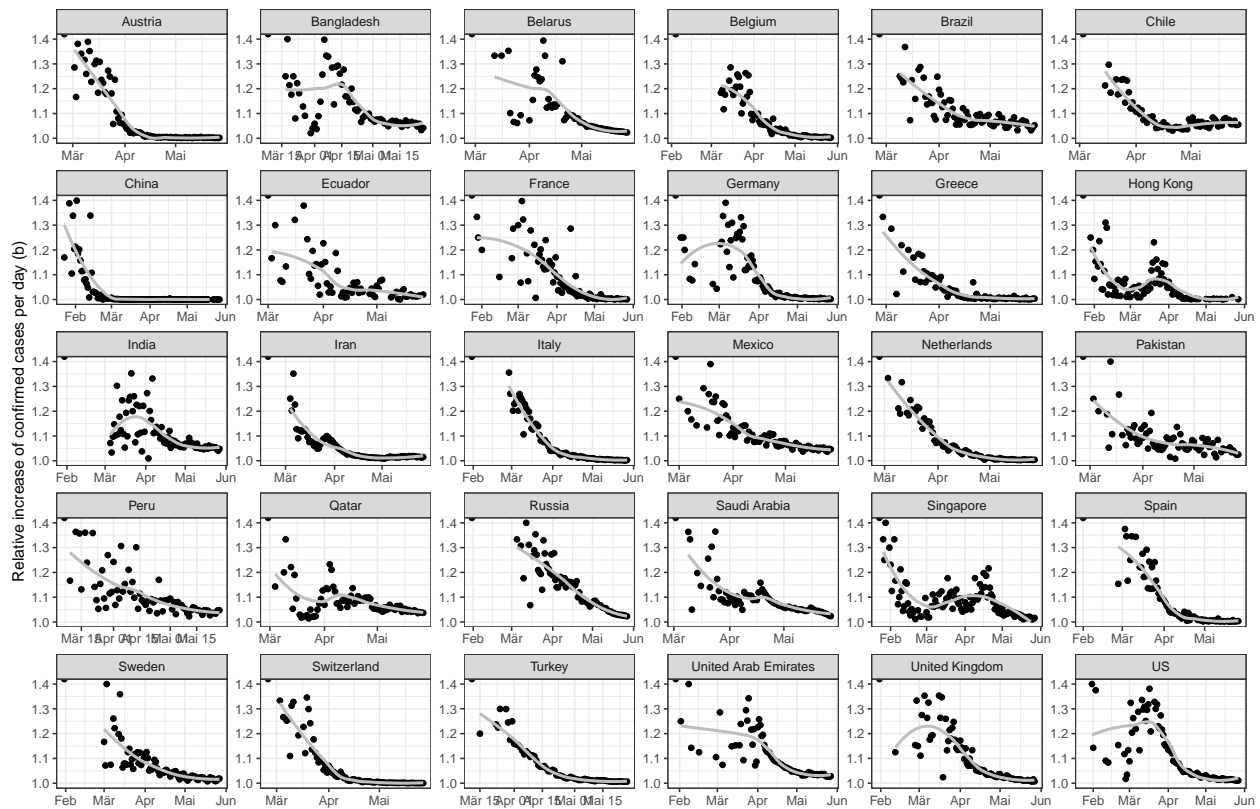
Absolute increase

Absolute numbers

For the capacity of the health systems, it is more important to look at the absolute numbers of new confirmed cases. The aim should be to get a constant number of new cases at a niveau which can be handled by the health system.

Austria and Switzerland have managed to drop the increase to a constant level. In many other countries (also Germany) the daily increases are still increasing.

In South Korea it can be nicely see how the exponential growth was lowered to a linear growth. This could/should be the aim...
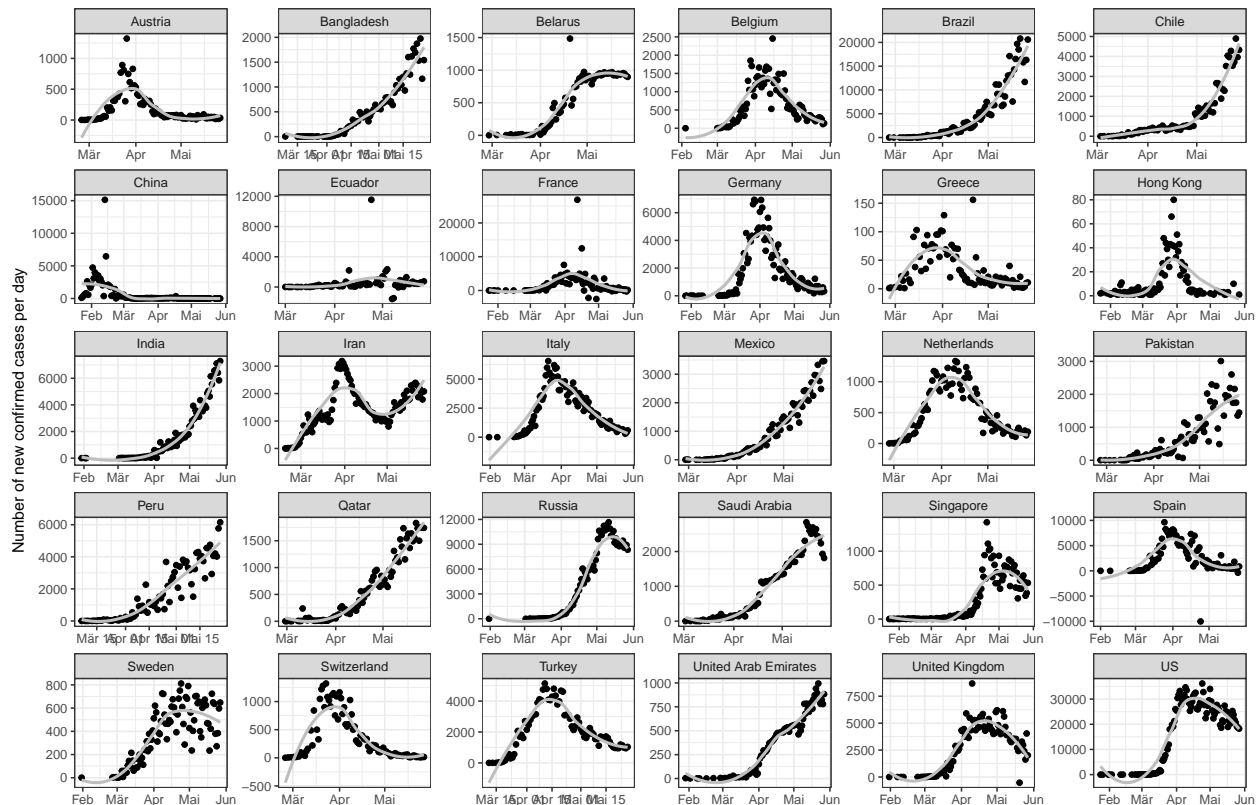
As number per 100 thousand inhabitants

Relating the absolute number of new cases to the total population per country. All in similar range, but still different. Not sure about the interpretation.
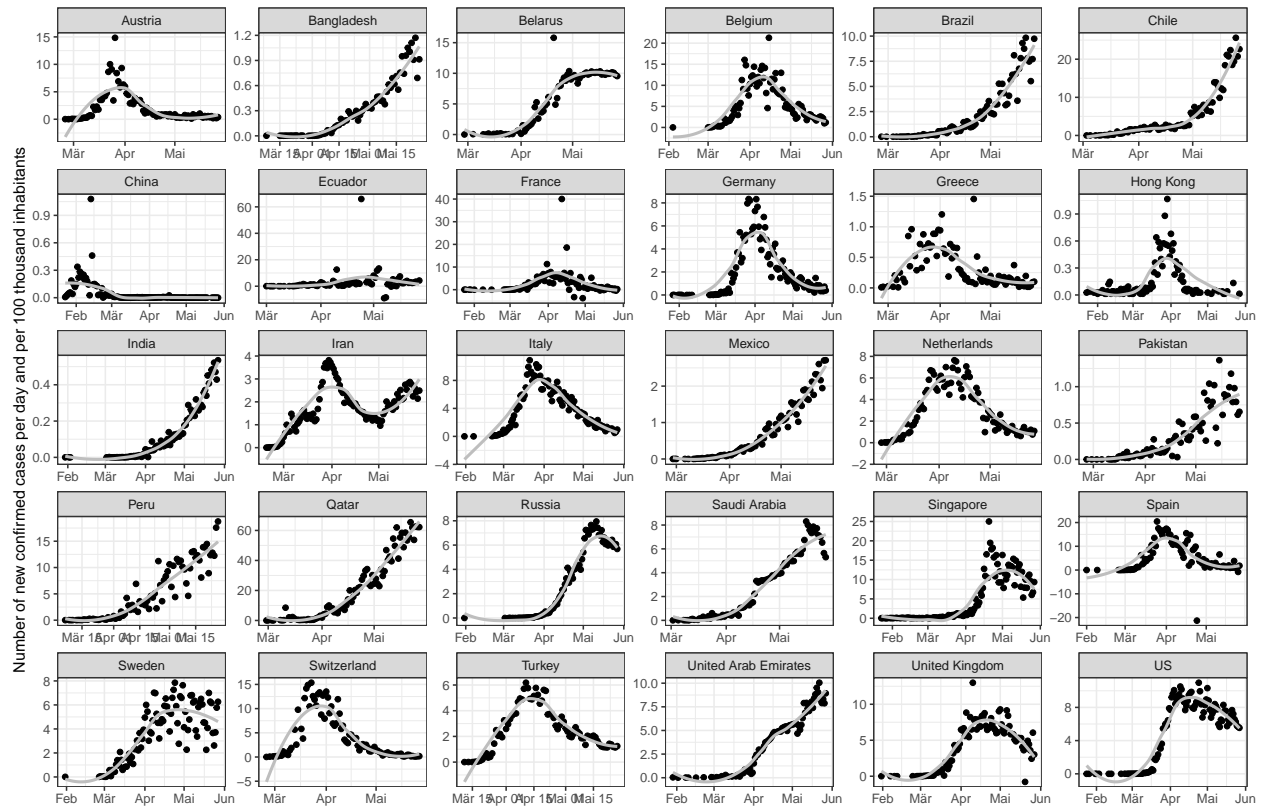
Percentage of population

Number of confirmed cases (most recent day) divided by the total population.

country	RatioPercent
San Marino	1.988
Qatar	1.751
Andorra	0.984
Luxembourg	0.639
Bahrain	0.628
Singapore	0.576
Kuwait	0.526
US	0.515
Ireland	0.504
Spain	0.502
Belgium	0.499
Iceland	0.493
Chile	0.431
Belarus	0.415
Peru	0.414
United Kingdom	0.400
Maldives	0.389
Italy	0.384
Switzerland	0.358
Sweden	0.339
United Arab Emirates	0.323
Portugal	0.304
Moldova	0.281
Panama	0.278
France	0.269
Armenia	0.263
Netherlands	0.262
Monaco	0.257
Russia	0.253
Djibouti	0.250
Saudi Arabia	0.230
Germany	0.218
Ecuador	0.218
Liechtenstein	0.212
Denmark	0.197
Brazil	0.195
Turkey	0.192
Austria	0.186
Israel	0.182
Oman	0.180
Iran	0.170
Serbia	0.162
Norway	0.156
Dominican Republic	0.152
Estonia	0.138
Malta	0.124
Finland	0.122
Cyprus	0.107