

## COVID-19 Weekly Newsletter

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**Contents:** Global overview / National comparisons / EU Test comparisons / Vaccinations / US States focus / Today's images: Lyme Park, Cheshire / [Notes]

### Global overview: [0]

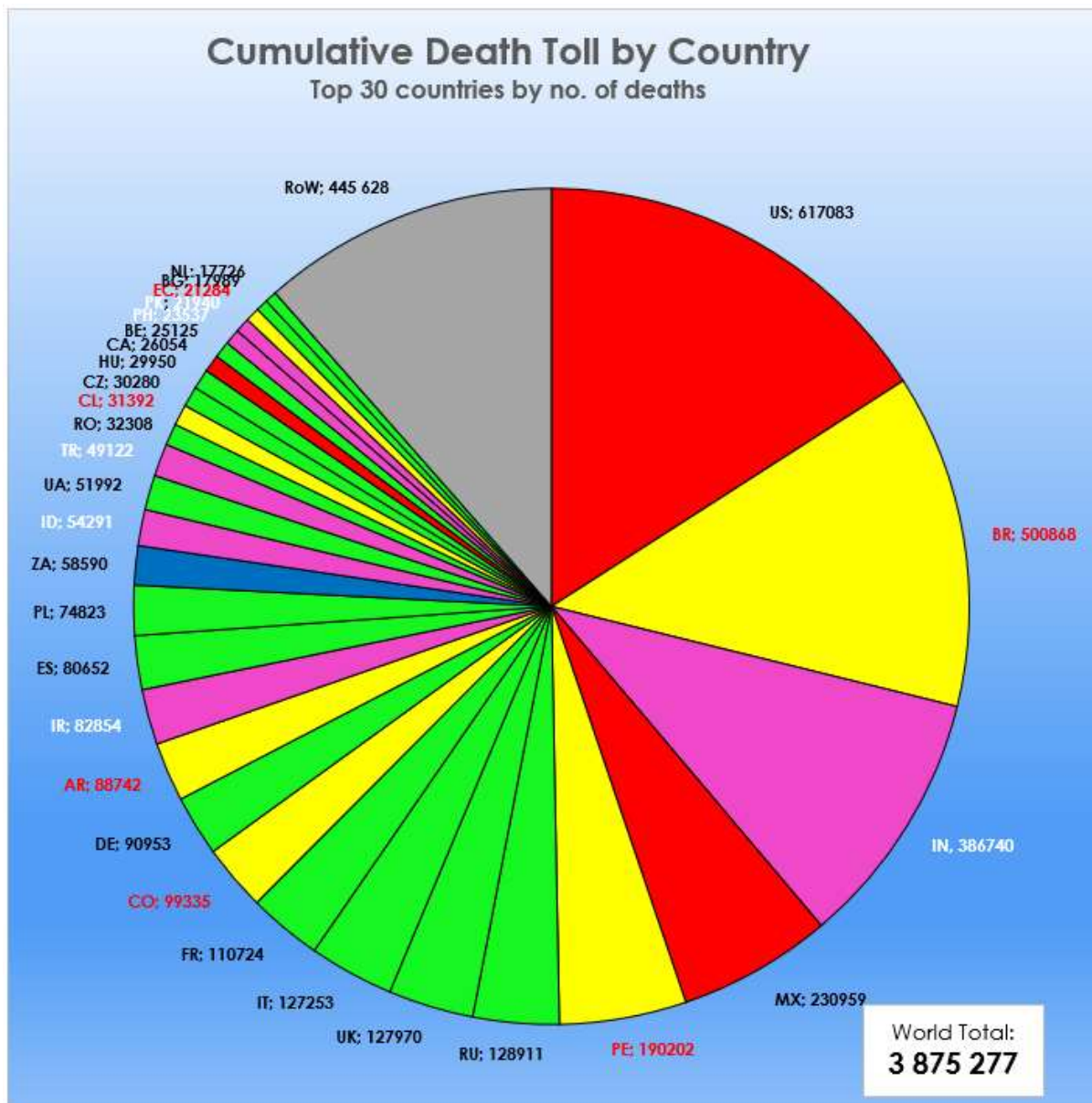
Since last time:

- The global daily death rate has been falling for over a month.  
(The 4-day rise in death rates reported last week disappeared from the data.  
Data are constantly updated!)
- Deaths in India are also falling.
- Bucking this positive trend are the South American countries.
- Namibia & Jamaica (codes NA & JM) recently recorded cumulative death tolls of over 1000.



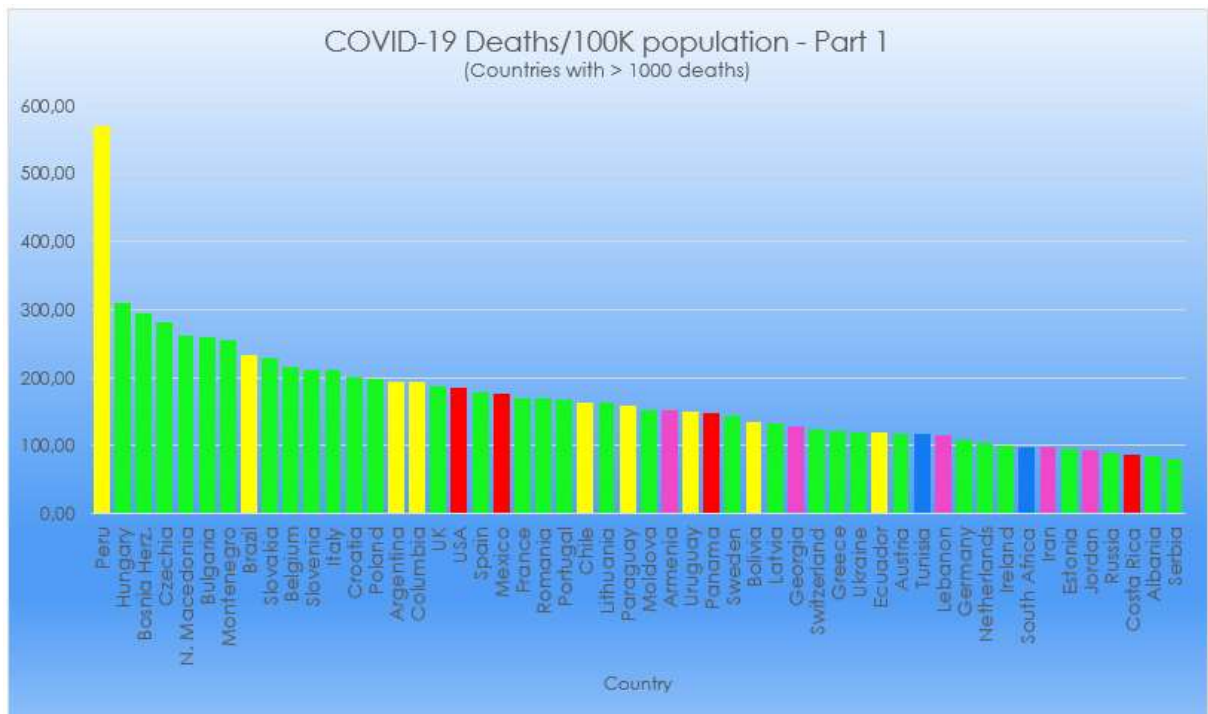
Cumulative death tolls for the top 30 countries [0]: **N. America**, **S. America**, **Europe**, **Asia**, & **Africa**  
European countries no longer occupy the top 50% segment.

Russia overtakes Italy & UK to become the European country reporting the greatest number of deaths:



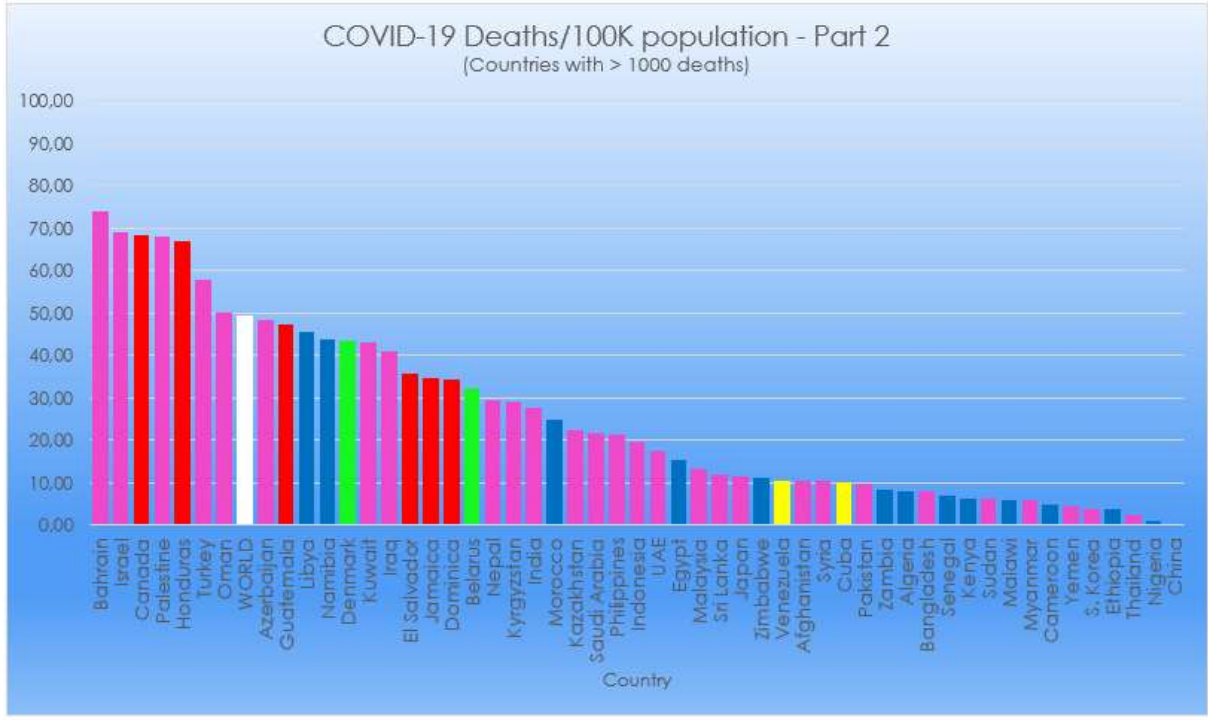
A lot of upward movement amongst the other >1000-death countries not shown above:  
**BO, GR, PY, NP, UY, CR, MY, AF, OM, LK, LV, TH & BH.** (again)

Per-capita death rates for all 104 countries with >1000 deaths:  
 It's the Americas & Europe which dominate the first half of the plot:



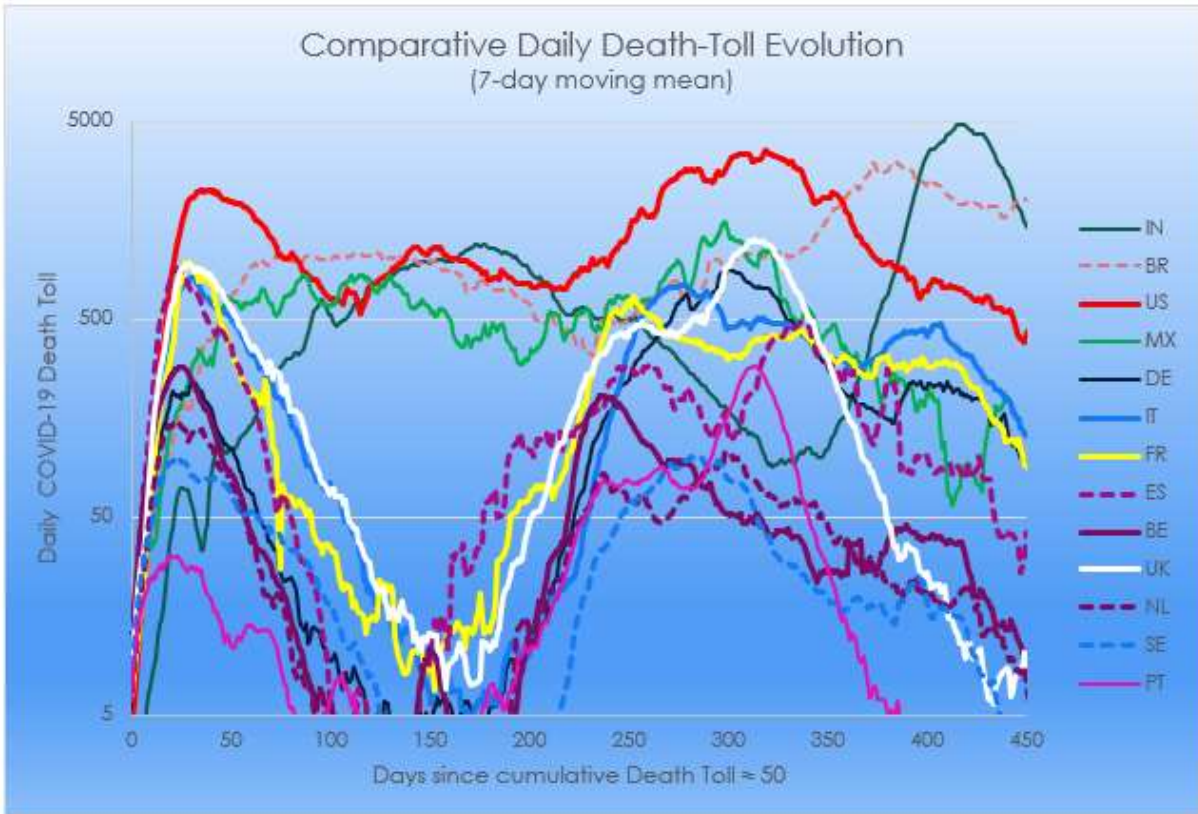
Moving left: **BR, AR, CO, RO, CL, PY, UY, BO, EC, TN, ZA & CR.** (again) (including all the S. Americans)

The bottom half is mostly Asia, Africa & Central America:  
 (Previously, I preserved the same scale for the two graphs – this makes no sense when it's Peru that sets the scale for the first graph.)



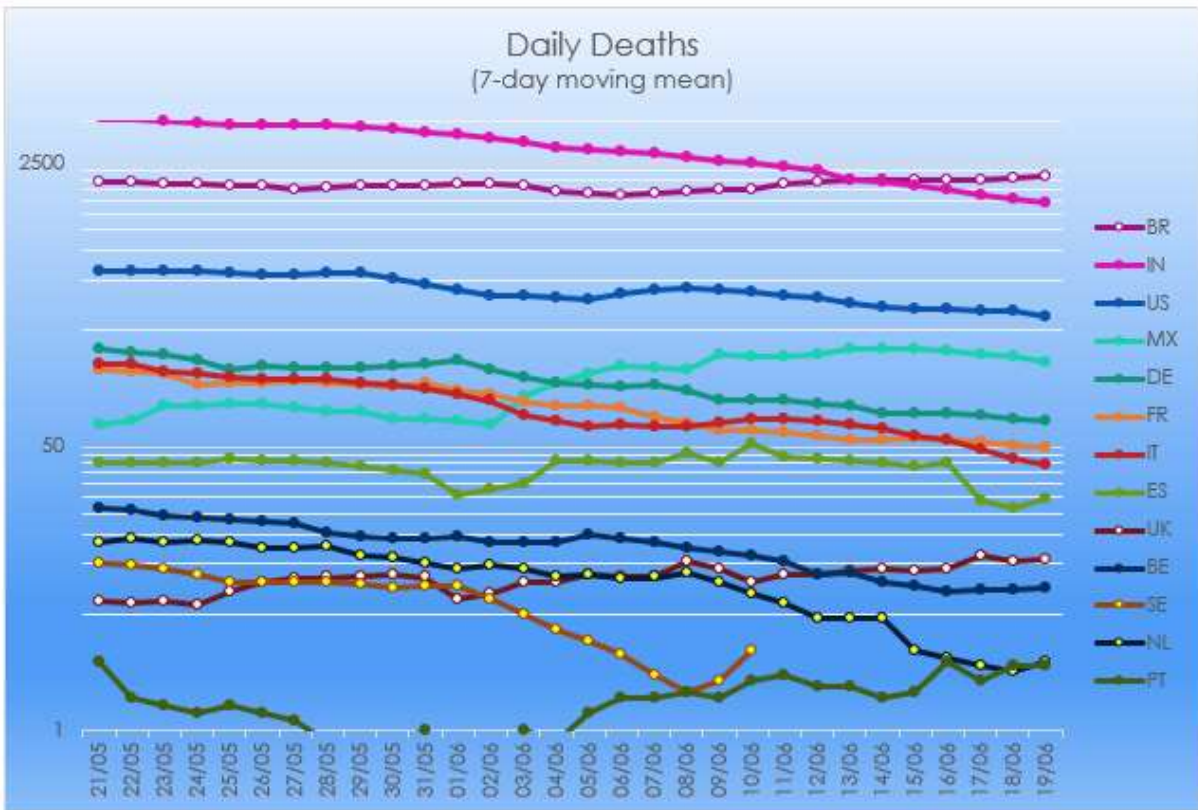
Movement to the left in Part 2: **BH, OM, NP, LK, VE, AF, CU, ZM & MW.** (again)

**National comparisons** (selected countries)  
 Here is the evolution in daily deaths rates (7-day moving mean) since each country's "Day0" [1]:



(Log y scale!)

Daily death rates (7-day moving mean) for the last 30 days:



(Log y scale!)

Comments apply to both of the above graphs:

- BR now has the highest daily death, as the IN toll has been dropping consistently throughout June.
- UK death rate has been rising slowly for the past 2 weeks.
- Other rates dropping.
- (SE has not reported their data for a week.)

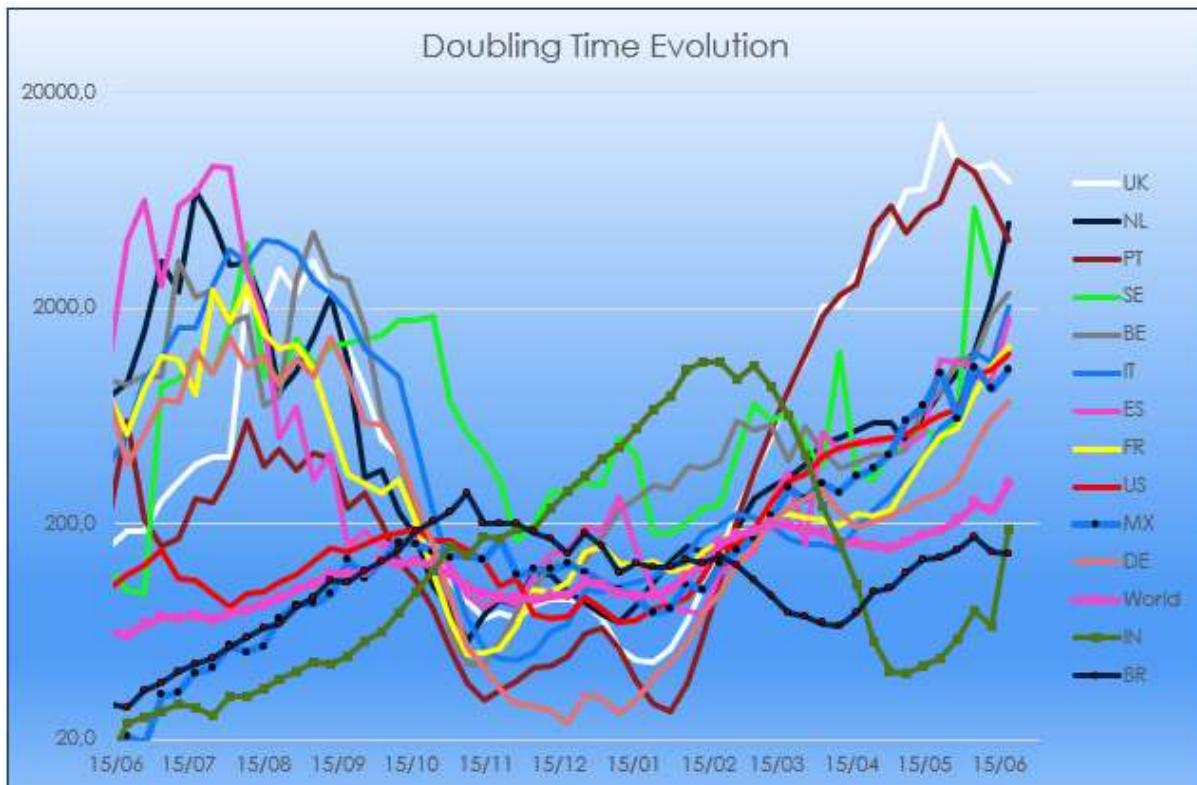
**Tendencies: Comparison of time scales [2]**

Double digits, triple+shortening, triple, quadruple

Country	1st death	Days since 1st death	"Day0"	Days since "Day0"	Doubling time (7-day fits)		
					19 Jun	12 Jun	05 Jun
IT	21 Feb	484	02 Mar	474	2029 days	1120 days	1242 days
FR	15 Feb	490	11 Mar	465	1332 days	1083 days	798 days
ES	03 Mar	473	11 Mar	465	1790 days	926 days	1080 days
US	29 Feb	476	13 Mar	463	1218 days	1042 days	952 days
UK	05 Mar	471	16 Mar	460	7664 days	9295 days	8955 days
NL	06 Mar	470	17 Mar	459	4984 days	2187 days	1250 days
DE	09 Mar	467	19 Mar	457	733 days	608 days	459 days
BE	11 Mar	465	20 Mar	456	2354 days	1884 days	1165 days
SE	11 Mar	465	24 Mar	452		2877 days	5855 days
BR	17 Mar	459	24 Mar	452	146 days	148 days	174 days
PT	16 Mar	460	25 Mar	451	4086 days	6013 days	8474 days
IN	12 Mar	464	26 Mar	450	190 days	67 days	79 days
MX	19 Mar	457	31 Mar	445	1036 days	845 days	1056 days
World	11 Jan	525	25 Jan	511	307 days	231 days	251 days

- Nine countries now green.
- IN no longer in the red zone.
- Deterioration only for BR.

This is how doubling times have been evolving since mid-June last year:

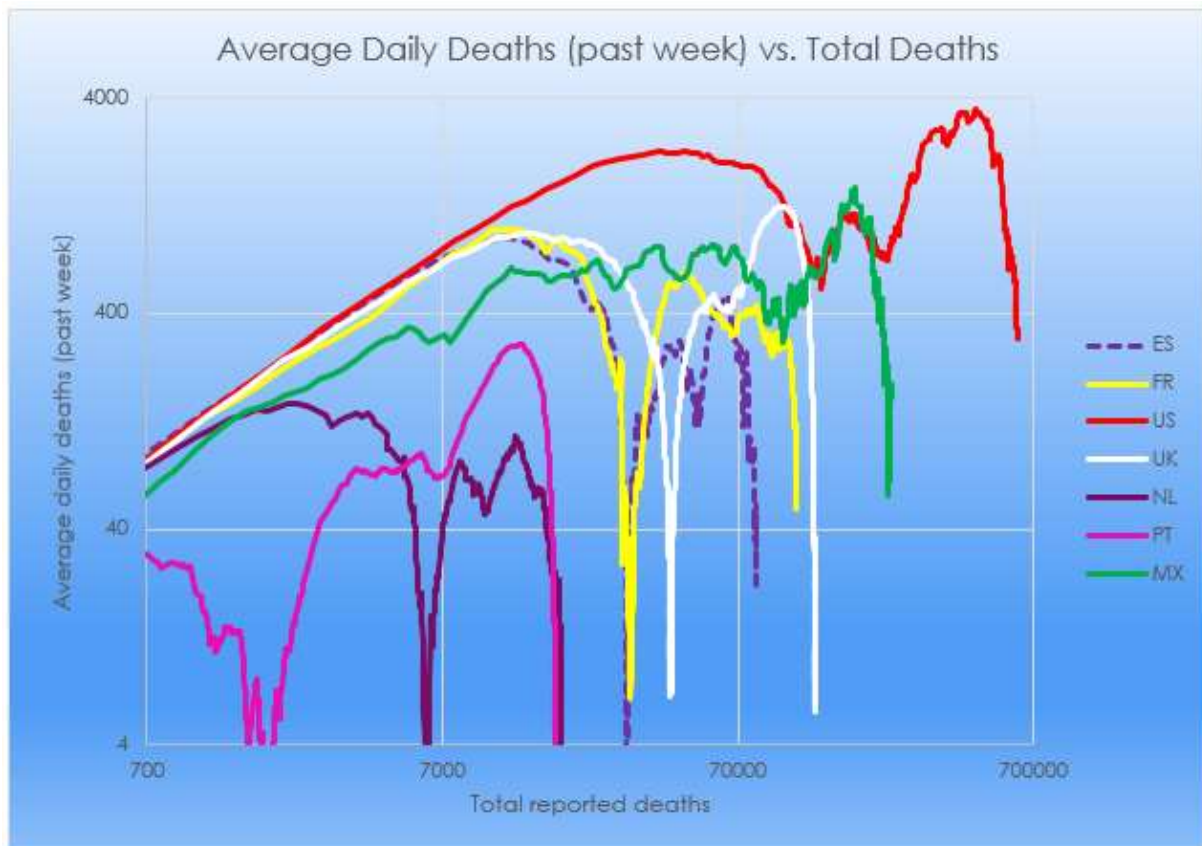


(Log y scale. Remember: Shorter doubling times equate to a faster evolution of the disease.)  
 Most countries rising. IN continues to rise, too.  
 UK, NL & PT doing well.

**Predictive statistics [3]**

To improve readability, I'm showing the same graph twice.

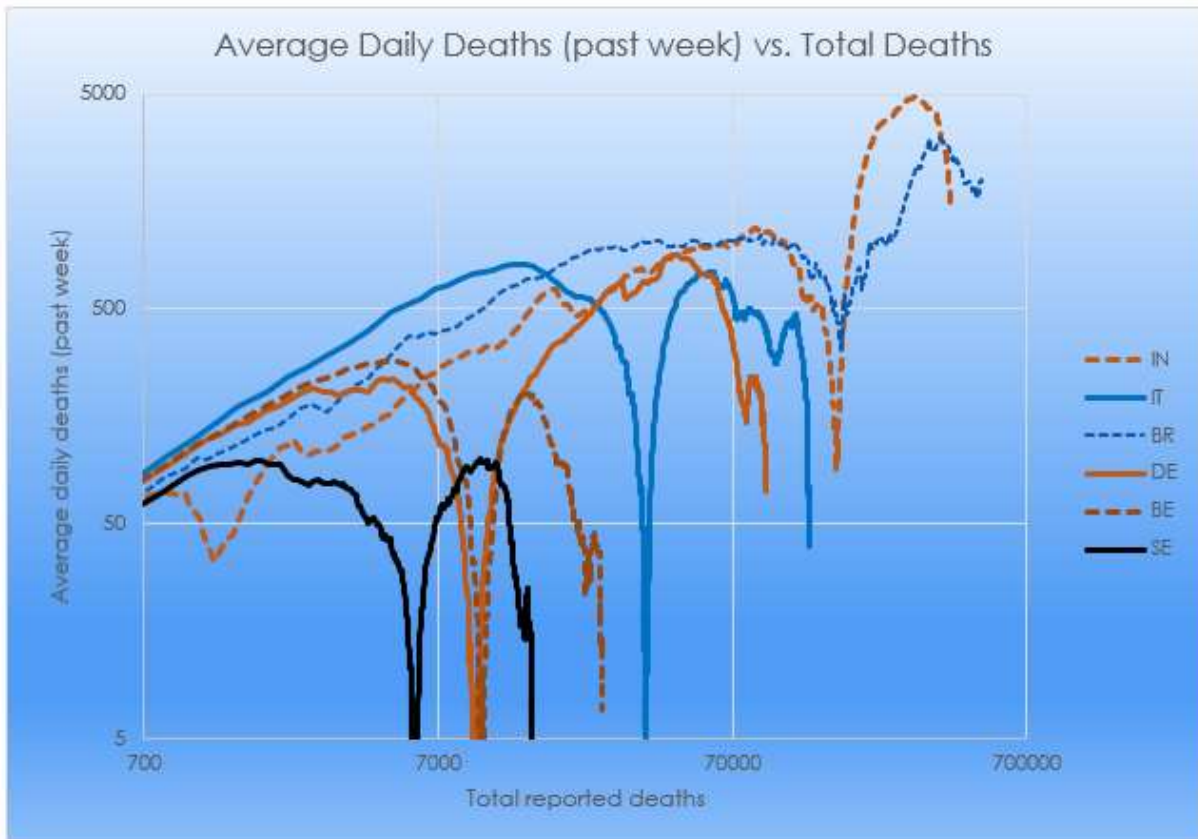
First, the countries with the most convincing fall off:



(log-log plot!)

The second for the other countries considered:

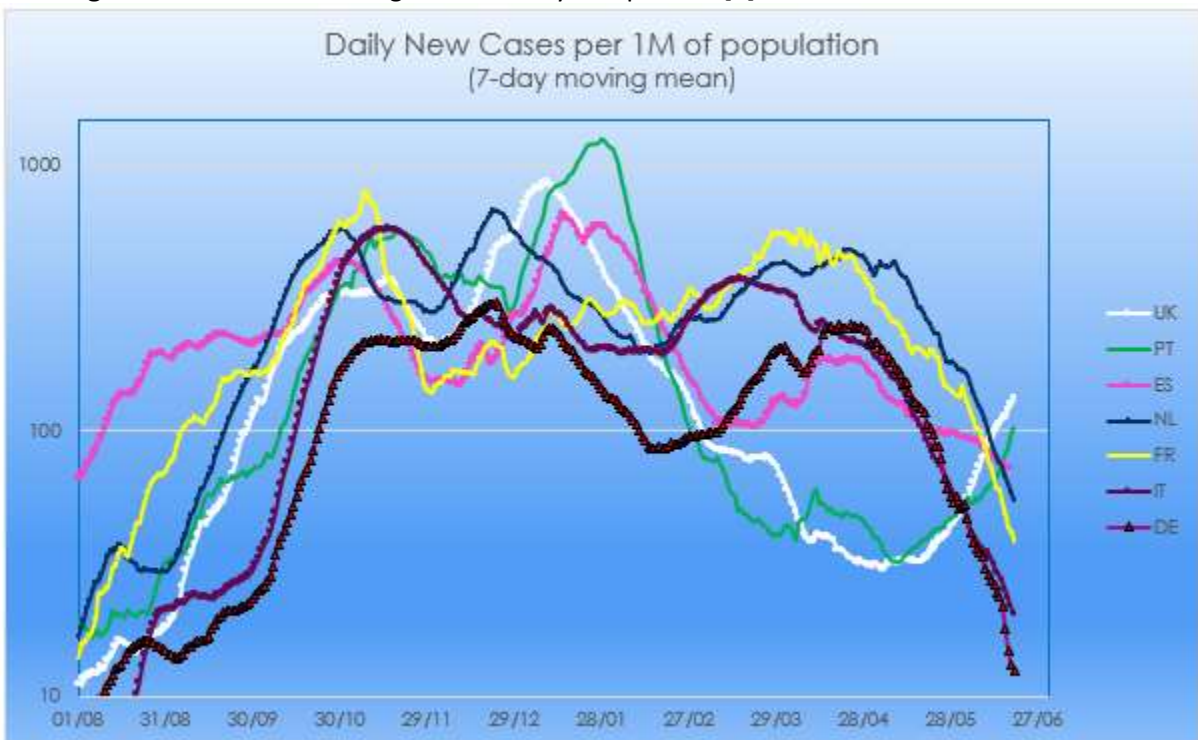
(IT should be in the first graph, but if I put it there its curve is masked by that of UK.)



IN now showing the hoped-for behaviour. Only BR not following the general positive trend.

### EU Test Comparisons

**Warning:** National data on testing are not really comparable [6].



(Log plot today!)

Most curves falling very rapidly.

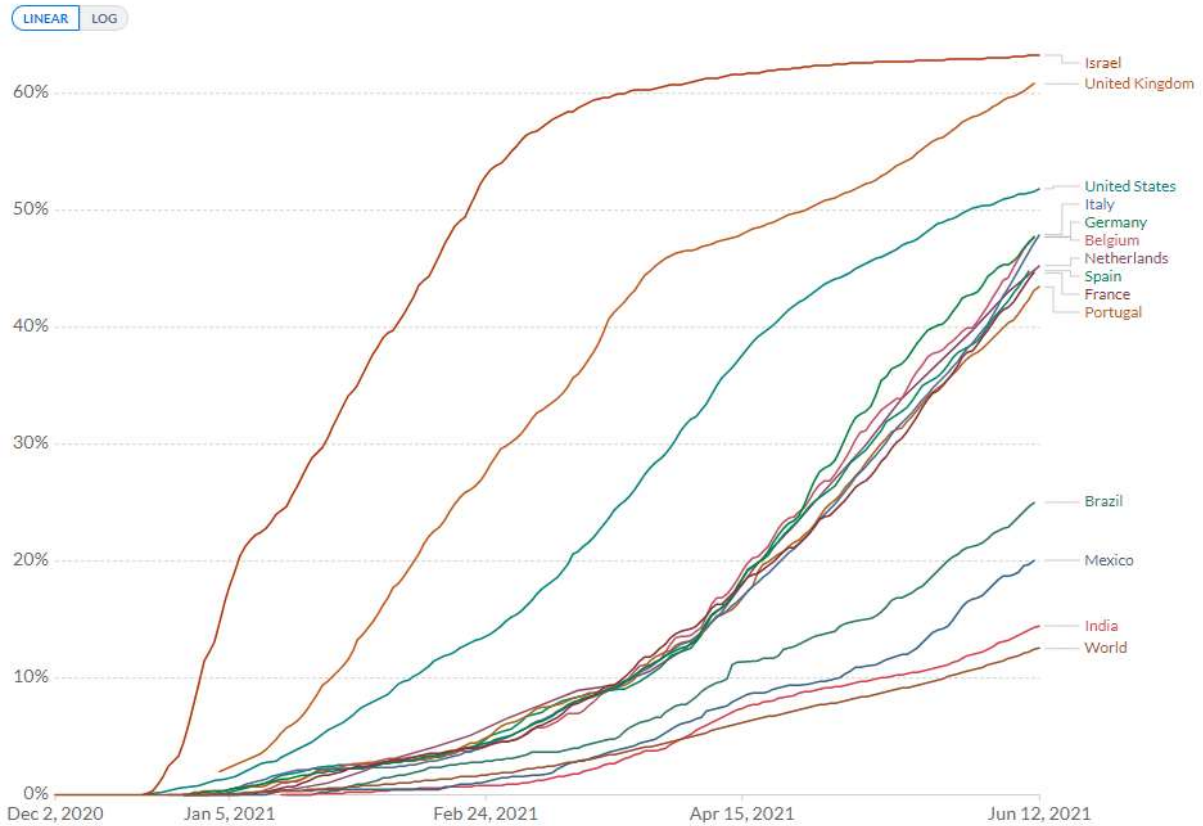
Only UK & PT rates rising and doing so rapidly.

## Vaccinations against COVID-19 [4]

### Share of people who received at least one dose of COVID-19 vaccine

Share of the total population that received at least one vaccine dose. This may not equal the share that are fully vaccinated if the vaccine requires two doses.

Our World  
in Data



Source: Official data collated by Our World in Data

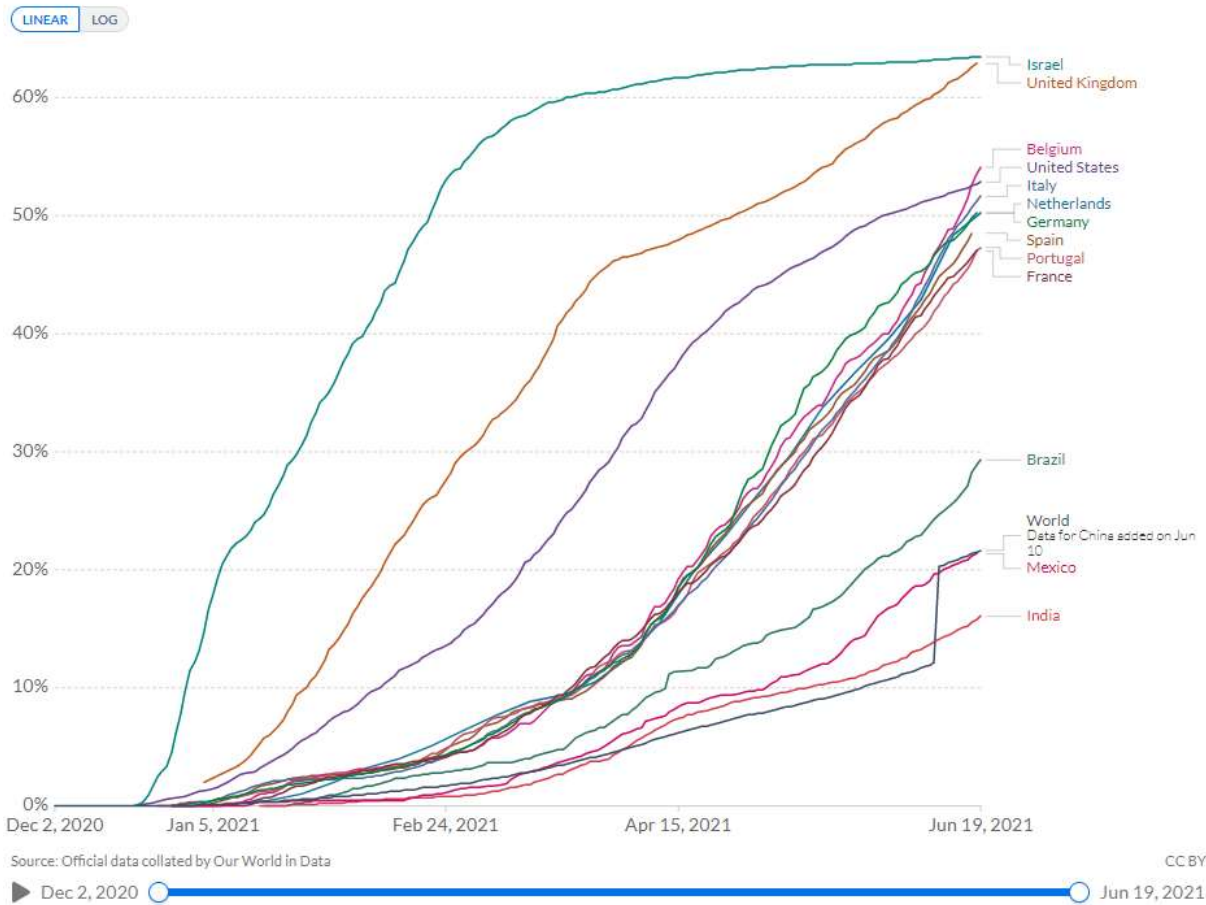
CC BY

The EU countries are vaccinating at remarkably similar rates, but Belgium outpacing the others.



# Share of people who received at least one dose of COVID-19 vaccine

Share of the total population that received at least one vaccine dose. This may not equal the share that are fully vaccinated if the vaccine requires two doses.

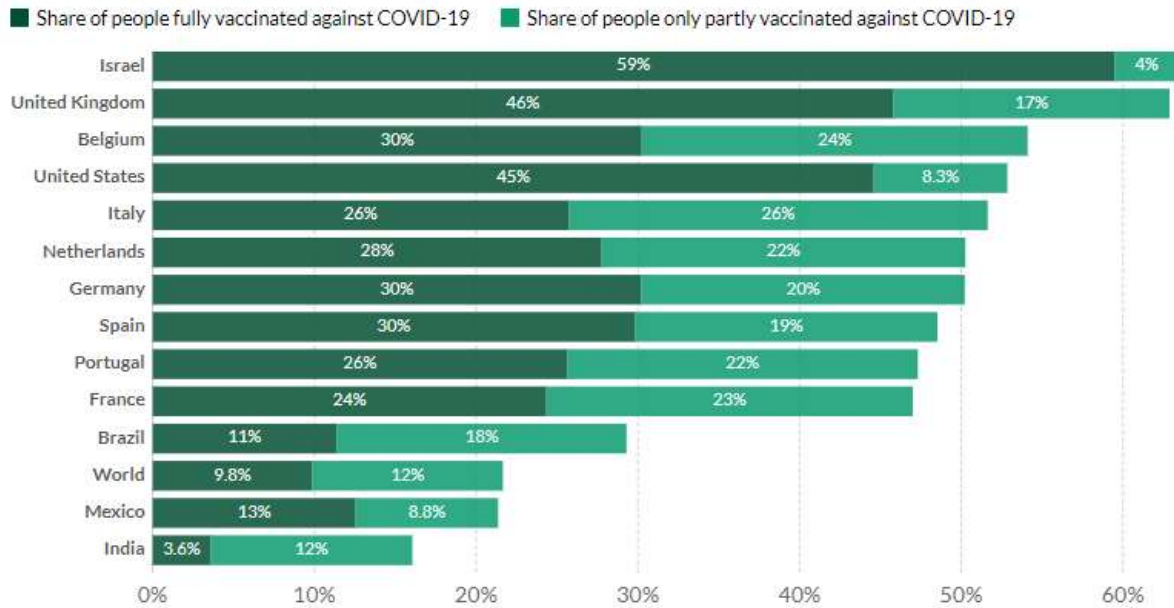


# Share of people vaccinated against COVID-19, Jun 19, 2021

This data is only available for countries which report the breakdown of doses administered by first and second doses.



[+ Add country](#)



Source: Official data collated by Our World in Data

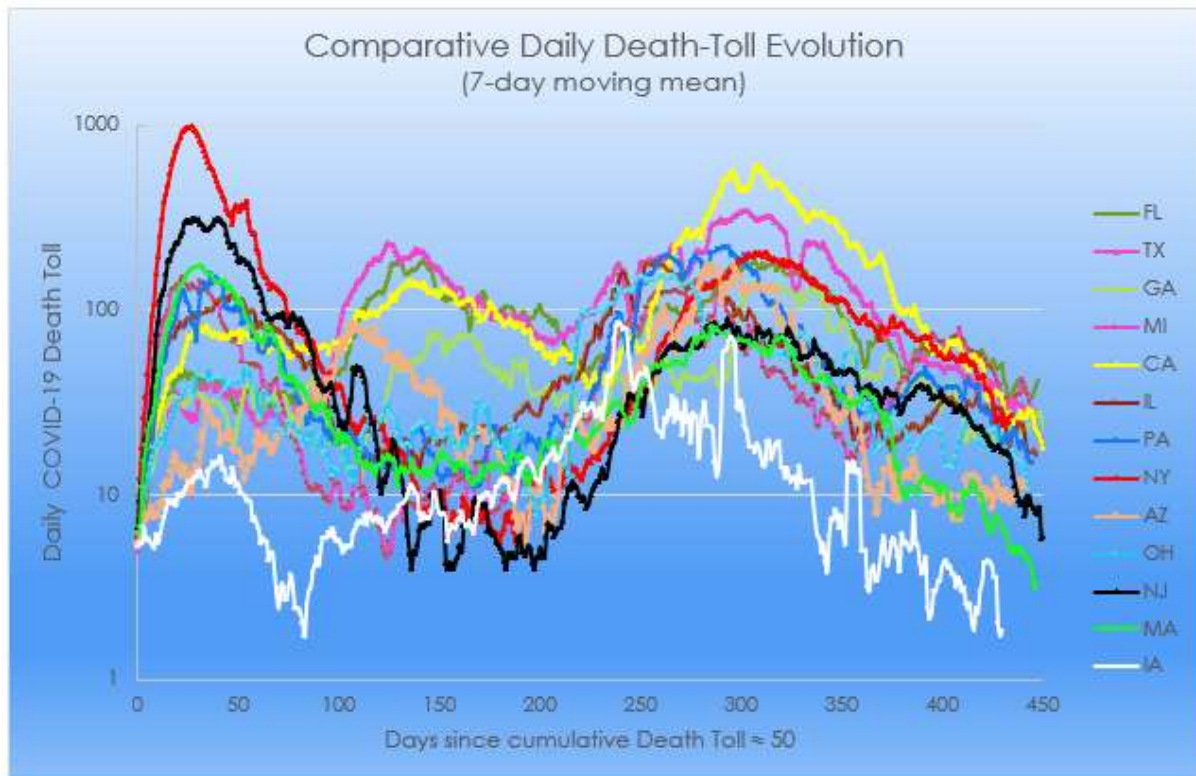
CC BY

Dec 27, 2020 Jun 19, 2021

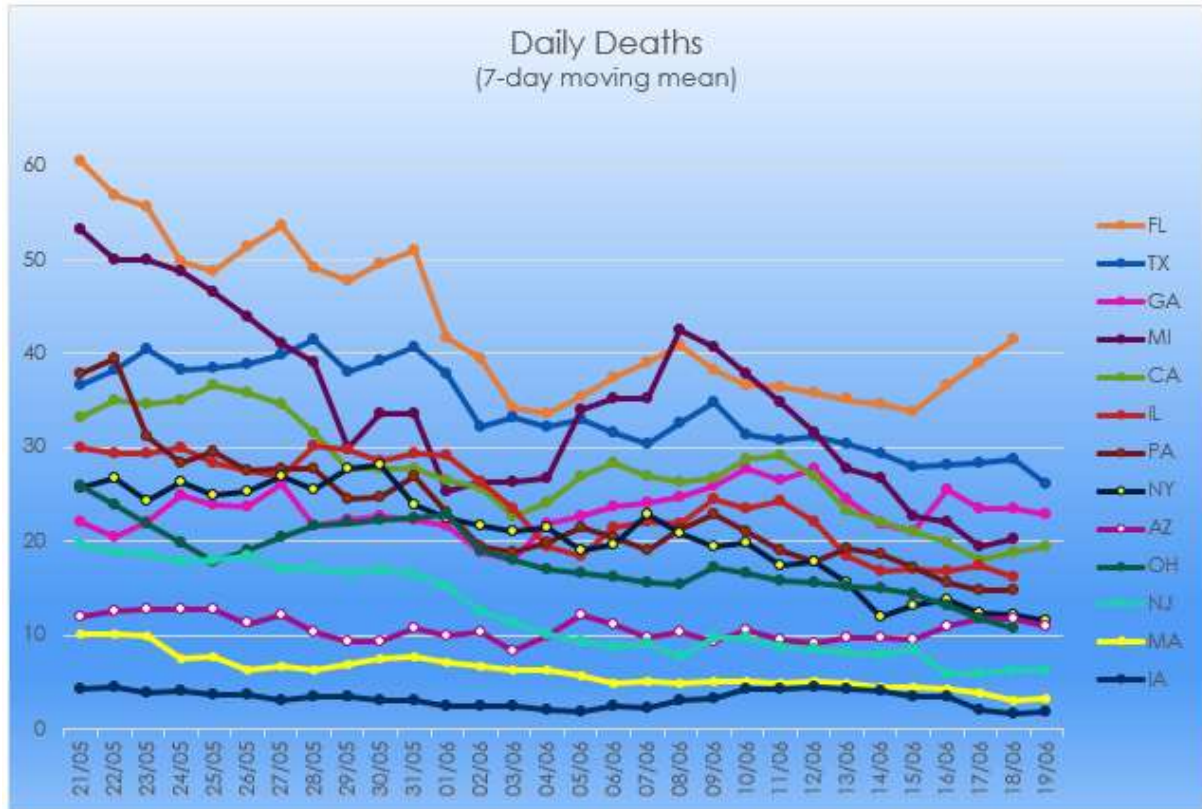
Belgium now outpacing the other EU countries listed.

## US States Focus (selected states)

Comparative Daily Death Toll evolution since each state's Day0 [1].



Comparative Daily Death Toll evolution over the past 30 days:



(Linear y scale)

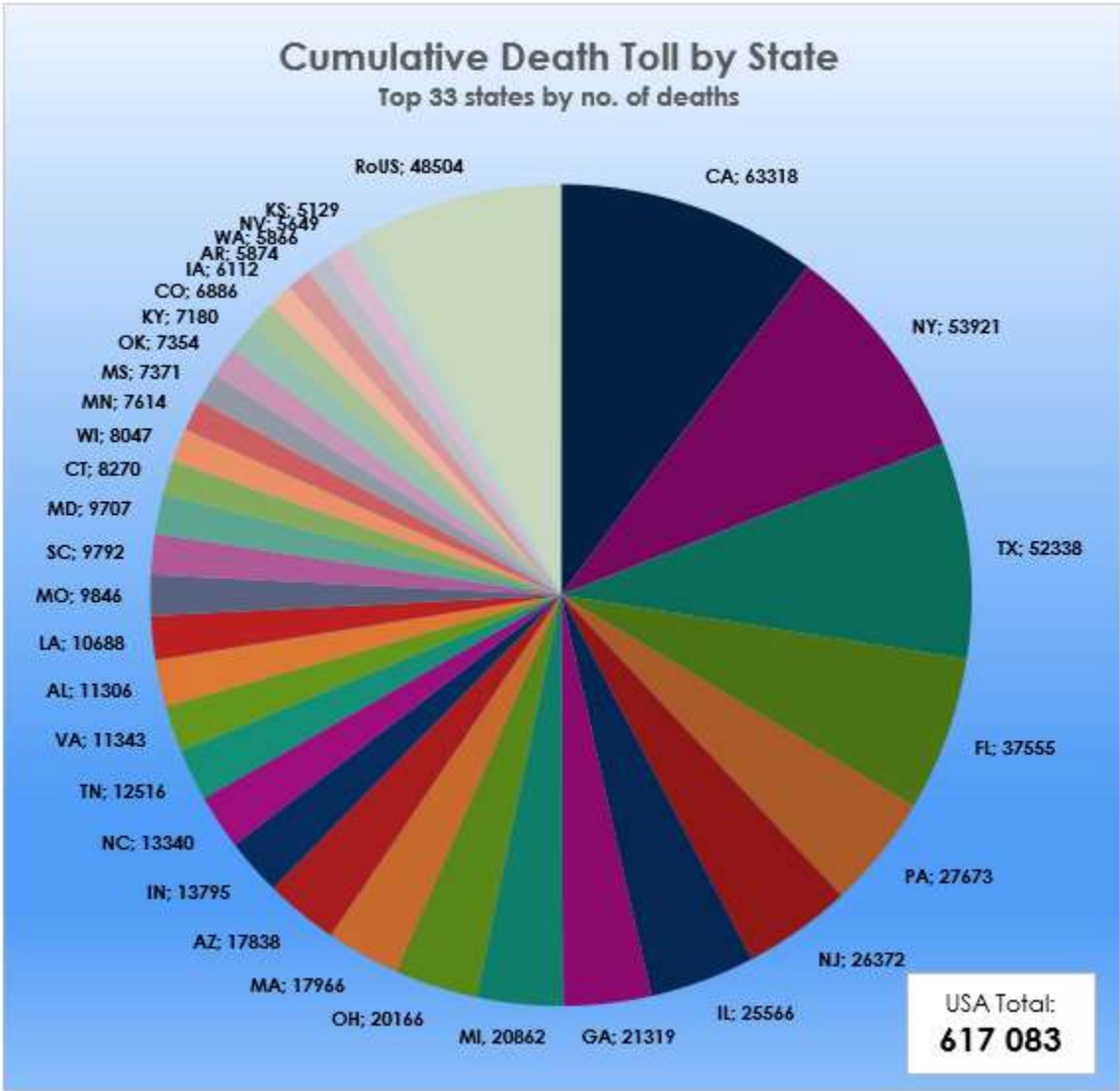
Comments apply to both of the above graphs.

The general trend is falling until 2 weeks ago then more or less static.

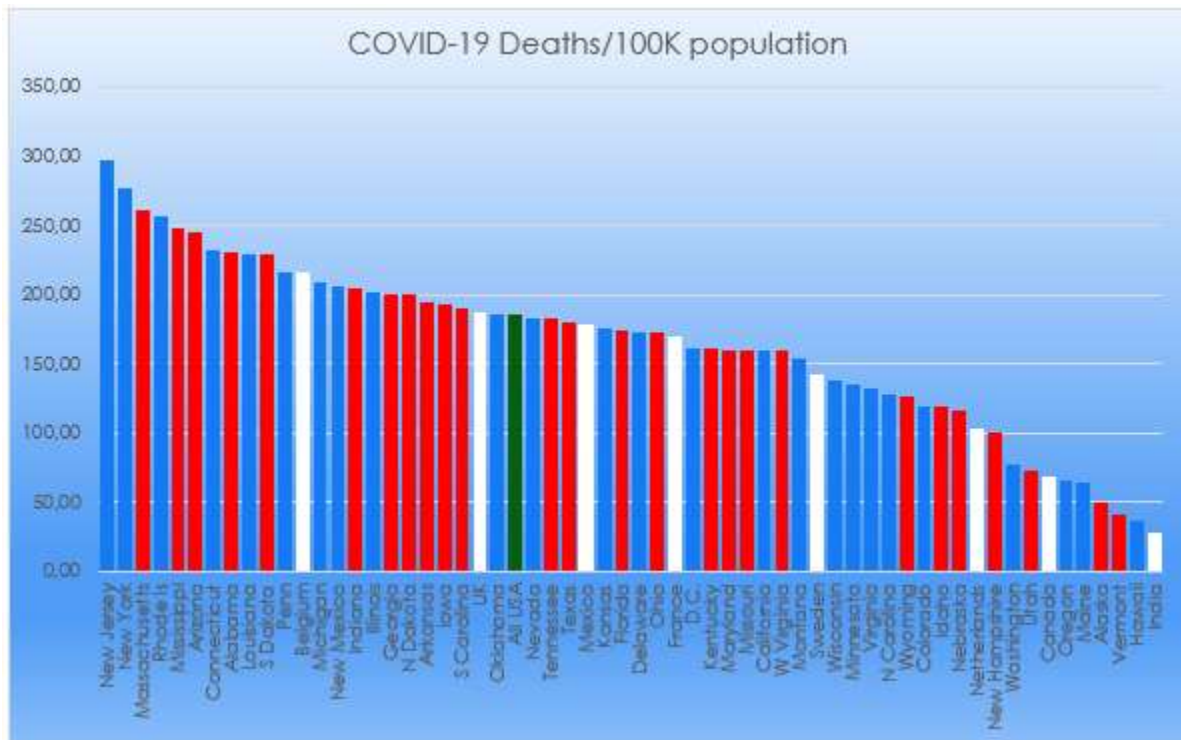
FL rising quite a bit recently.

Cumulative death toll for the top 33 US states:

AR overtakes WA.



Per capita (for all 50 states):



Moving left: LA, GA, NV, KY & MD. (again)

**Tendencies: Comparison of time scales [2]**

Double digits, triple+shortening, triple, quadruple

State	1st death	Days since 1st death	"Day0"	Days since "Day0"	Doubling time (7-day fits)		
					19 Jun	12 Jun	05 Jun
AZ	20 Mar	456	04 Apr	441	993 days	1216 days	1035 days
CA	04 Mar	472	24 Mar	452	1921 days	1499 days	1445 days
FL	06 Mar	470	27 Mar	449	565 days	707 days	668 days
GA	14 Mar	462	20 Mar	456	492 days	491 days	534 days
IA	24 Mar	452	15 Apr	430	2370 days	809 days	1756 days
IL	17 Mar	459	28 Mar	448	972 days	889 days	978 days
MA	20 Mar	456	29 Mar	447	3707 days	2485 days	2300 days
MI	18 Mar	458	25 Mar	451	866 days	464 days	413 days
NJ	10 Mar	466	24 Mar	452	2401 days	1766 days	1654 days
NY	14 Mar	462	20 Mar	456	3150 days	2492 days	1925 days
OH	18 Mar	458	31 Mar	445	1180 days	749 days	770 days
PA	18 Mar	458	30 Mar	446	1212 days	877 days	795 days
TX	16 Mar	460	30 Mar	446	1142 days	1028 days	1015 days

Mixed results this week:

- Eight out of 13 states now green.
- Deterioration only for FL & AZ.
- Poorest performance now GA instead of MI.

This is how doubling times have been evolving since mid-June:



(Log plot! – Remember longer doubling times are preferable.)

MI no longer down at the bottom.

Overall trend remains upwards.

Next update next Sunday.

Keep well, keep safe, keep isolated – and I hope you're all getting vaccinated!

David

**Today's images:** Taken by **Allan** while visiting this National Trust property to the south-east of Manchester:



The Lyme Park exteriors were used as Pemberley in the BBC series of *Pride & Prejudice*.  
Lyme Park has lots of beautiful parkland & gardens, including the Italianate Garden...



More Pride & Prejudice action was set in the nearby Ramshaw Rocks:



Please keep sending me your images for this space...



## Notes

[0] The national COVID-19 data are taken from the [worldometers website](https://www.worldometers.info/) which reproduces the data collected from Official Websites of Ministries of Health of other Governmental Institutions and Government authorities' social media accounts.

- Different countries use different criteria in recording COVID-19 deaths, often distinguishing between *probable* and *confirmed* cause of death.
  - Belgium appears to have the loosest criterion attributing any death to COVID-19 if there is any suspicion that COVID-19 could have been the cause.
  - The UK recently changed the definition: death occurring within 28 days of a positive test for COVID-19. (If the patient dies 29 days after the test, it wasn't officially caused by COVID-19.)
  - China has only reported a single COVID-19 death since 17<sup>th</sup> May 2020! This occurred on 14<sup>th</sup> January 2021.
- Some countries, notably Sweden & Spain, regularly update the entire set of historical data provided to the website. Other countries, e.g., UK & USA, do the same but more rarely.

ISO two-letter country codes used in this Update									
AI	World	CO	Columbia	IE	Ireland	MK	North Macedonia	RU	Russia
AE	UAE	CR	Costa Rica	IL	Israel	MM	Myanmar	SA	Saudi Arabia
AF	Afghanistan	CU	Cuba	IN	India	MW	Malawi	SD	Sudan
AL	Albania	CZ	Czechia	IQ	Iraq	MX	Mexico	SE	Sweden
AM	Armenia	DE	Germany	IR	Iran	MY	Malaysia	SI	Slovenia
AR	Argentina	DK	Denmark	IT	Italy	NA	Namibia	SK	Slovakia
AT	Austria	DO	Dominican Rep.	JM	Jamaica	NL	Netherlands	SN	Senegal
AZ	Azerbaijan	DZ	Algeria	JO	Jordan	NO	Norway	SV	El Salvador
BA	Bosnia Herzegovina	EC	Ecuador	JP	Japan	NP	Nepal	SY	Syria
BD	Bangladesh	EE	Estonia	KE	Kenya	OM	Oman	TH	Thailand
BE	Belgium	EG	Egypt	KG	Kyrgyzstan	PA	Panama	TN	Tunisia
BG	Bulgaria	ES	Spain	KR	Rep. Of Korea	PE	Peru	TR	Turkey
BH	Bahrain	ET	Ethiopia	KW	Kuwait	PH	Philippines	UA	Ukraine
BO	Bolivia	FI	Finland	LB	Lebanon	PK	Pakistan	UK	UK
BR	Brazil	FR	France	LK	Sri Lanka	PL	Poland	US	USA
BY	Belarus	GE	Georgia	LT	Lithuania	PS	Palestine	UY	Uruguay
CA	Canada	GR	Greece	LV	Latvia	PT	Portugal	VE	Venezuela
CH	Switzerland	GT	Guatemala	LY	Libya	PY	Paraguay	YE	Yemen
CL	Chile	HR	Croatia	MA	Morocco	RO	Romania	ZA	South Africa
CM	Cameroon	HU	Hungary	MD	Moldova	RoW	Rest of World	ZM	Zambia
CN	China	ID	Indonesia	ME	Montenegro	RS	Serbia	ZW	Zimbabwe

US States									
AL	Alabama	HI	Hawaii	ME	Maine	NJ	New Jersey	SD	South Dakota
AK	Alaska	IA	Iowa	MI	Michigan	NM	New Mexico	TN	Tennessee
AR	Arkansas	ID	Idaho	MN	Minnesota	NV	Nevada	TX	Texas
AZ	Arizona	IL	Illinois	MO	Missouri	NY	New York	UT	Utah
CA	California	IN	Indiana	MS	Mississippi	OH	Ohio	VA	Virginia
CO	Colorado	KS	Kansas	MT	Montana	OK	Oklahoma	VT	Vermont
CT	Connecticut	KY	Kentucky	NC	North Carolina	OR	Oregon	WA	Washington
DE	Delaware	LA	Louisiana	ND	North Dakota	PA	Pennsylvania	WI	Wisconsin
FL	Florida	MA	Massachusetts	NE	Nebraska	RI	Rhode Island	WV	West Virginia
GA	Georgia	MD	Maryland	NH	New Hampshire	SC	South Carolina	WY	Wyoming

[1] For comparison purposes, the data of individual countries have been shifted horizontally so that a synchronization occurs at the same point on the horizontal (time) axis which I denote "Day0". Day0 has been chosen to be the date on which the cumulative number of deaths was closest to 50 for the country concerned.

[2] The doubling time is a characteristic of exponential growth. It is the period of time over which the number of cases double, and is an inverse measure of the gradient of the curve. A doubling time makes sense when the curve is close to an exponential, i.e., a straight line on a semi-logarithmic graph. For this reason, in order to follow the evolution in the number of cumulative deaths per country, I fit an exponential to the data at the end of the curve (7 days' data) and extract from this a "doubling time".

The doubling time means what it says: If the exponential tendency persists unchanged, the numbers of deaths at the end of the doubling time will be double the current number.

Example based on US data: On 29/08/2020 no. deaths was 188 900 and doubling time was 116 days. This implies no. deaths on 23/12/2020 (116 days later) will have doubled – to 377 800.

The actual number on that date was 339 422, which reveals that there was a decline in the exponential tendency – but not by that much.

Clearly, long doubling times are good; short ones are bad.

[3] One of the characteristics of the exponential function is that the gradient (or rate of change), is proportional to the value of the function.

(For those who remember their calculus, the solution of  $df(t)/dt = k f(t)$  is  $f(t) = e^{kt}$ .)

By plotting the change (number of deaths in a given period) on the y-axis against the total number of deaths on the x-axis, an exponential gives a straight line on a log-log graph. When the mortality rate stops being exponential, the country curve plummets down from the main sequence.

The points represent values on a succession of days, the end point being yesterday. The more closely spaced are the points (days), the slower the evolution; the greater the distance between points, the faster the evolution.

To give a clearer meaning to the y-axis data, we plot the average no. of deaths in the past 7 days vs. the cumulative no. of deaths on the x-axis.

This analysis was proposed by **Dr Aatish Bhatia**. An animated version of this graph can be viewed on his [website](#). (Use the panel on the right to configure for *Reported Deaths* and select the countries to be viewed.)

An entertaining video explaining this presentation of the data can be found [here](#).

[4] **Vaccinations against COVID-19**: These data are collected from official reports by the **Our World in Data team** and can be found [here](#).

[5] The sources of the NYC & Long Island data are not the same as the one used for national data:

Source for the 5 boroughs:

<https://github.com/nychealth/coronavirus-data/blob/master/totals/by-boro.csv>

Source for Nassau & Suffolk counties:

<https://coronavirus.smartnews.com/us/new-york/>

[6] **Testing policies vary widely & unpredictably both regionally and in time.**