COVID-19 Weekly Newsletter
Issue N° 145, Sunday, 2021-09-26
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Contents: Global overview / National comparisons / EU Test comparisons / Vaccinations / US States focus / Today's images: Alpine scenes near Barcelonnette / [Notes]

Global overview: [0]
Since last time:
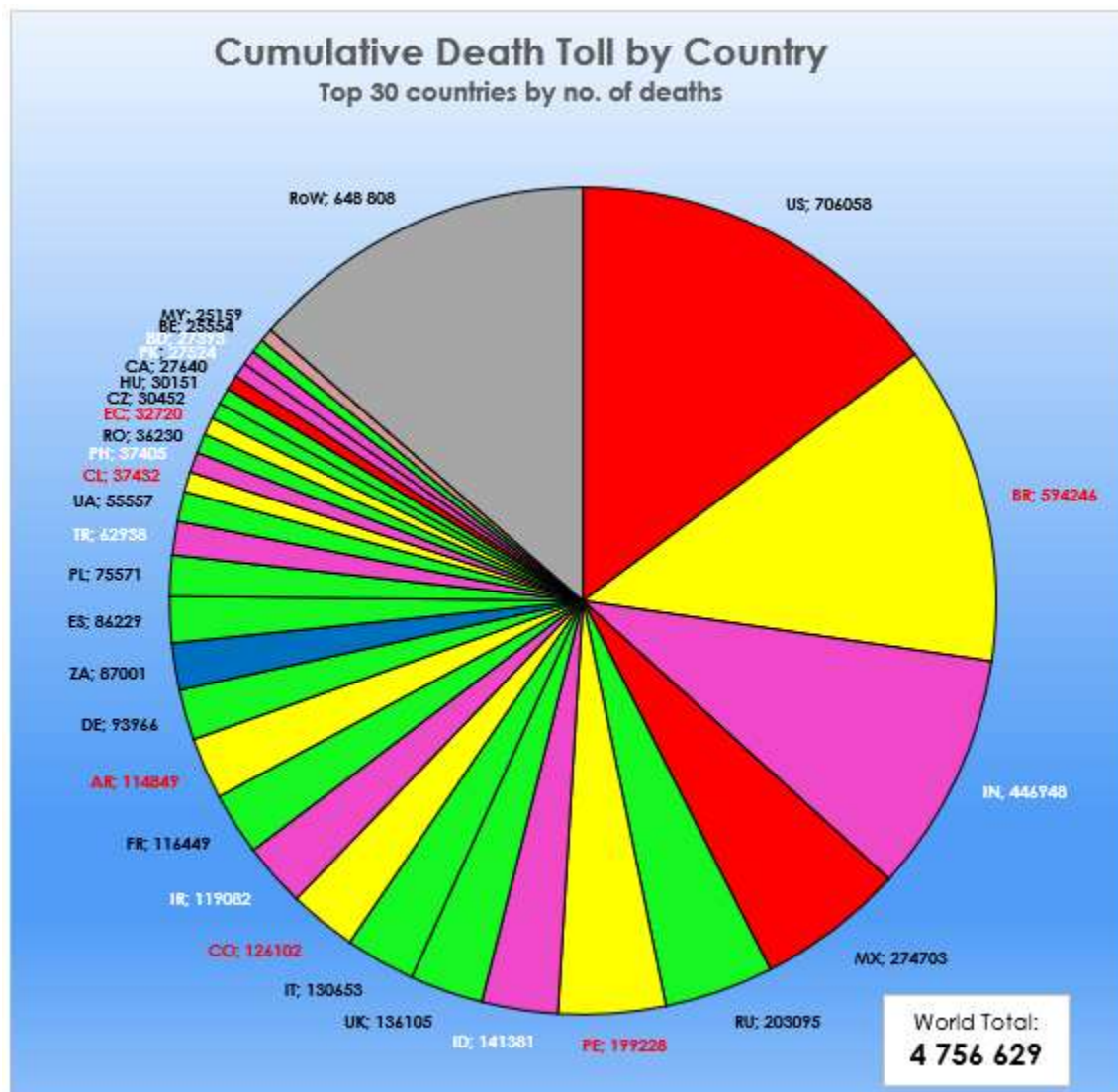
   − The global daily death rate continues to fall.

The Top 10 countries contributing to the death toll over the past week are:

| Top 10 Avg Daily Death Tolls	
USA	810
Russia	595
Mexico	528
Brazil	327
Iran	299
Malaysia	297
India	225
Turkey	220
Vietnam	151
Indonesia	137
Top10	3 590
World	7 703
	47%

Cumulative death tolls for the top 30 countries [0]: N. America, S. America, Europe, Asia, Africa and now Oceania
Moving up the rankings this week: Russia, Pakistan & Malaysia
(the latter entering the Top 30 for the first time, displacing Tunisia):

Cumulative Death Toll by Country
Top 30 countries by no. of deaths

RoW; 648 808
US; 706058
BR; 594246
IN, 446748
MX; 274703
RU; 203095
PE; 199228
ID; 141381
UK; 136105
IT; 130653
CO; 124102
IR; 119082
FR; 116449
AR; 114849
DE; 93966
ZA; 87001
ES; 86229
PL; 75571
TR; 62938
UA; 55557
CL; 37452
PH; 37405
RO; 36230
EC; 32720
CZ; 30452
HU; 30151
CA; 27640
FI; 27524
BG; 27373
BE; 25554
MY; 25159

World Total:
4 756 629

Quite a bit of upward movement amongst the other >1000-death countries not shown above.
VN, MM, TH, LK, GE, PA, ET, AM, LY, BY, SV, LV, AL, KH, ME, AO, AU, UZ, MN & SO. (again)

Per-capita death rates for all 120 countries with >1000 deaths:
It's the Americas & Europe which dominate the first half of the plot:

COVID-19 Deaths/100K population – Part 1
(Countries with > 1000 deaths)
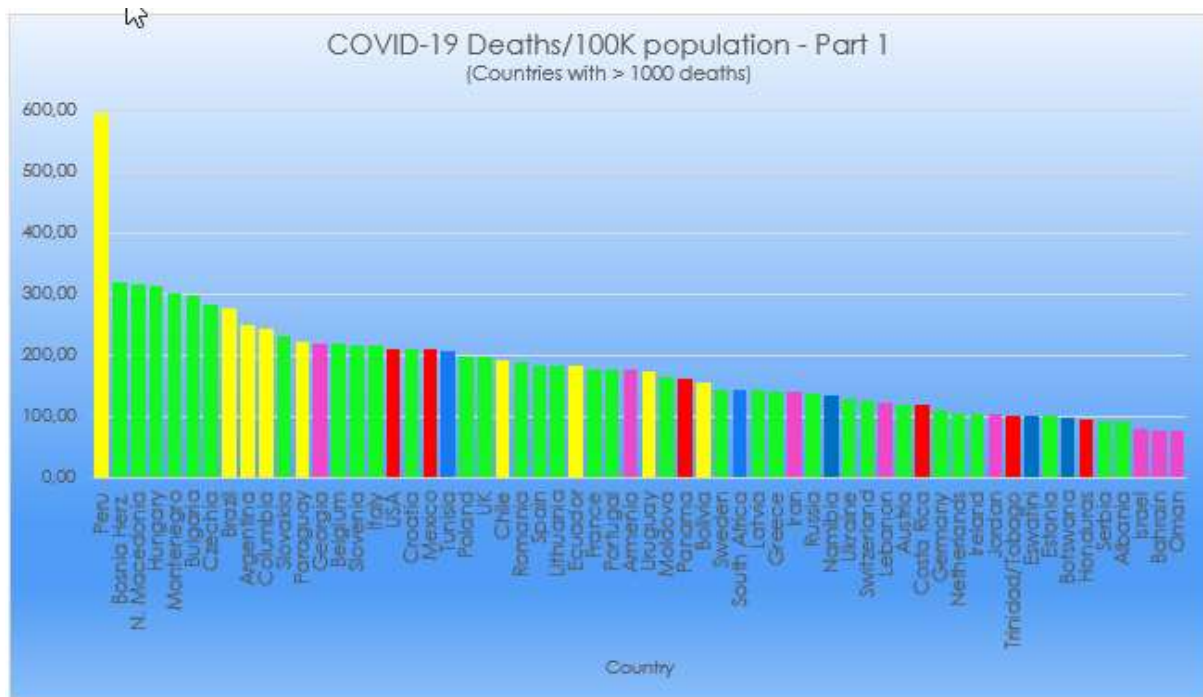
Moving left: MK (now in 3rd place), GE, US, LT, AM, TT & RS. (again)

The bottom half is mostly Asia, Africa & Central America:

COVID-19 Deaths/100K population – Part 2
(Countries with > 1000 deaths)
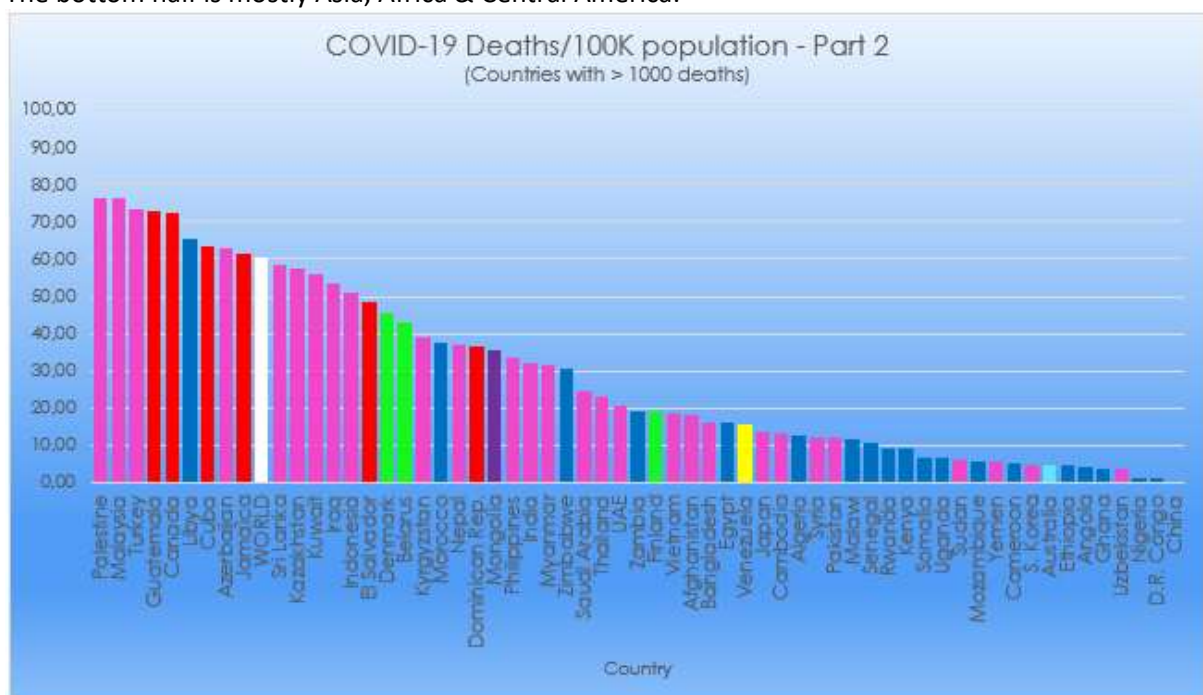
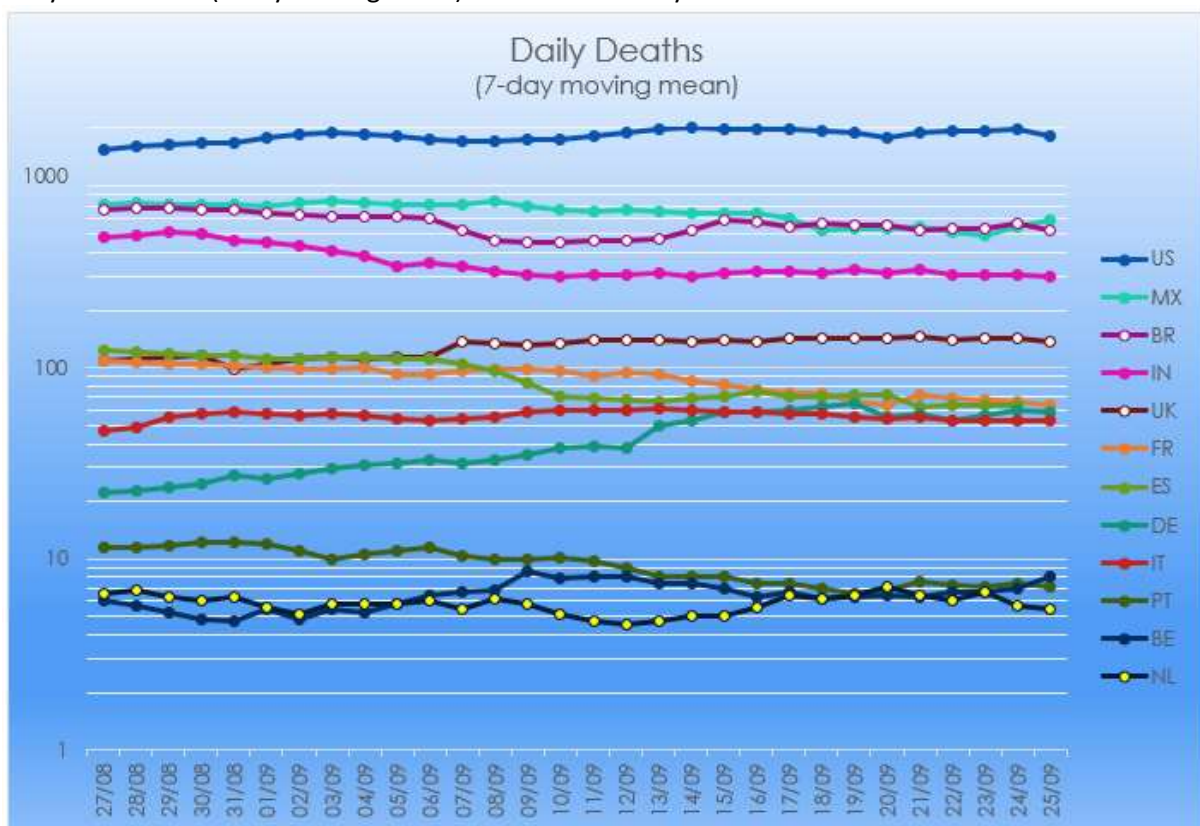Moving left: MY, GT, CU, LK, KZ, MN, VN, KH, SY & SO. (again)

National comparisons (selected countries)
Here is the evolution in daily deaths rates (7-day moving mean) since each country's "Day0" [1]:
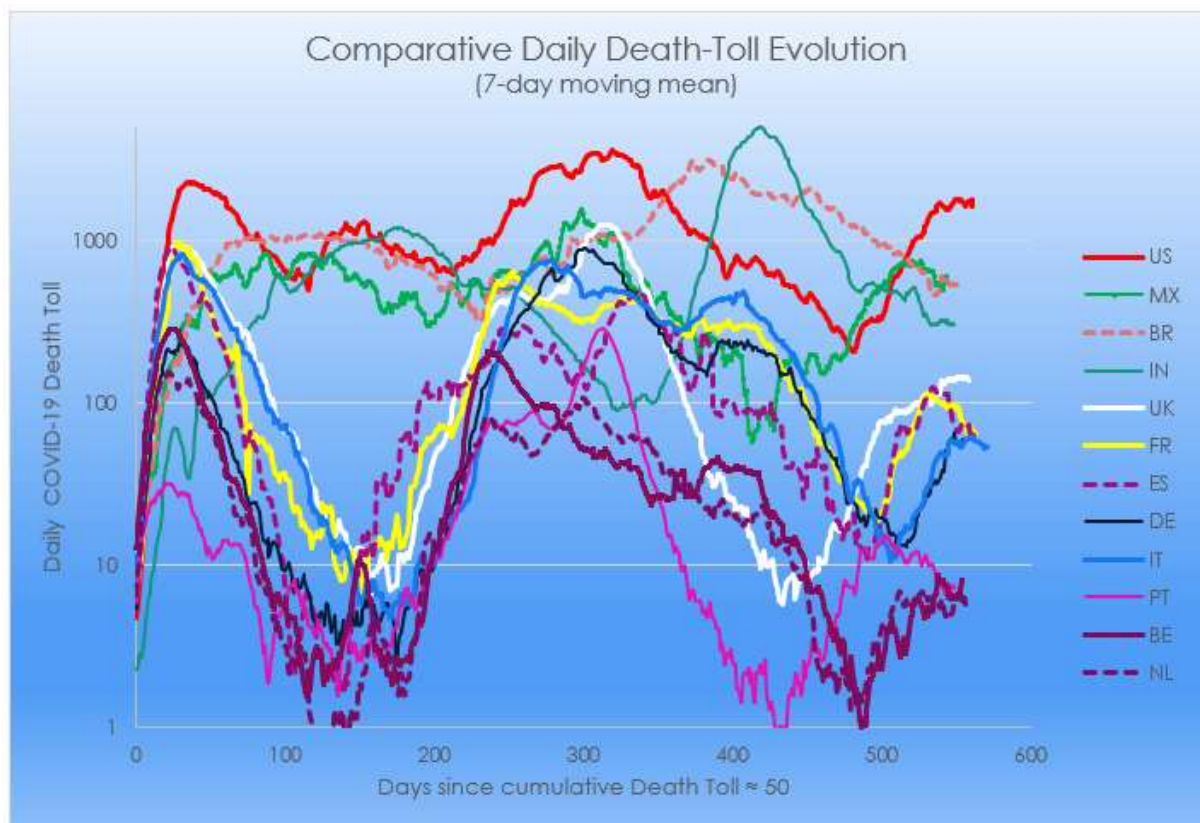
(Log y scale!)
Daily death rates (7-day moving mean) for the last 30 days:

(Log y scale!)
Comments apply to both of the above graphs:

- Most countries flat-lining during the past month, but – remember – this is a log plot.

– Close inspection shows that rates have been falling slowly but pretty consistently in FR & PT, and rising substantially in DE.

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)			
					25 Sep	18 Sep	11 Sep	04 Sep
IT	21 Feb 20	582	02 Mar 20	572	1607 days	1519 days	1430 days	1664 days
FR	15 Feb 20	588	11 Mar 20	563	1116 days	1097 days	792 days	788 days
ES	03 Mar 20	571	11 Mar 20	563	747 days	638 days	691 days	402 days
US	29 Feb 20	574	13 Mar 20	561	259 days	264 days	313 days	323 days
UK	05 Mar 20	569	16 Mar 20	558	583 days	563 days	573 days	702 days
NL	06 Mar 20	568	17 Mar 20	557	2082 days	1688 days	2383 days	1942 days
DE	09 Mar 20	565	19 Mar 20	555	972 days	929 days	1453 days	1804 days
BE	11 Mar 20	563	20 Mar 20	554	2164 days	2763 days	2091 days	3178 days
BR	17 Mar 20	557	24 Mar 20	550	668 days	648 days	811 days	570 days
PT	16 Mar 20	558	25 Mar 20	549	1626 days	1762 days	1378 days	1152 days
IN	12 Mar 20	562	26 Mar 20	548	1019 days	930 days	967 days	795 days
MX	19 Mar 20	555	31 Mar 20	543	310 days	323 days	258 days	233 days
World	11 Jan 20	623	25 Jan 20	609	397 days	360 days	361 days	321 days

- Stability or improvement for 9 countries & the World in general.
- Worst cases: Still US & MX.

This is how doubling times have been evolving since mid-June last year:
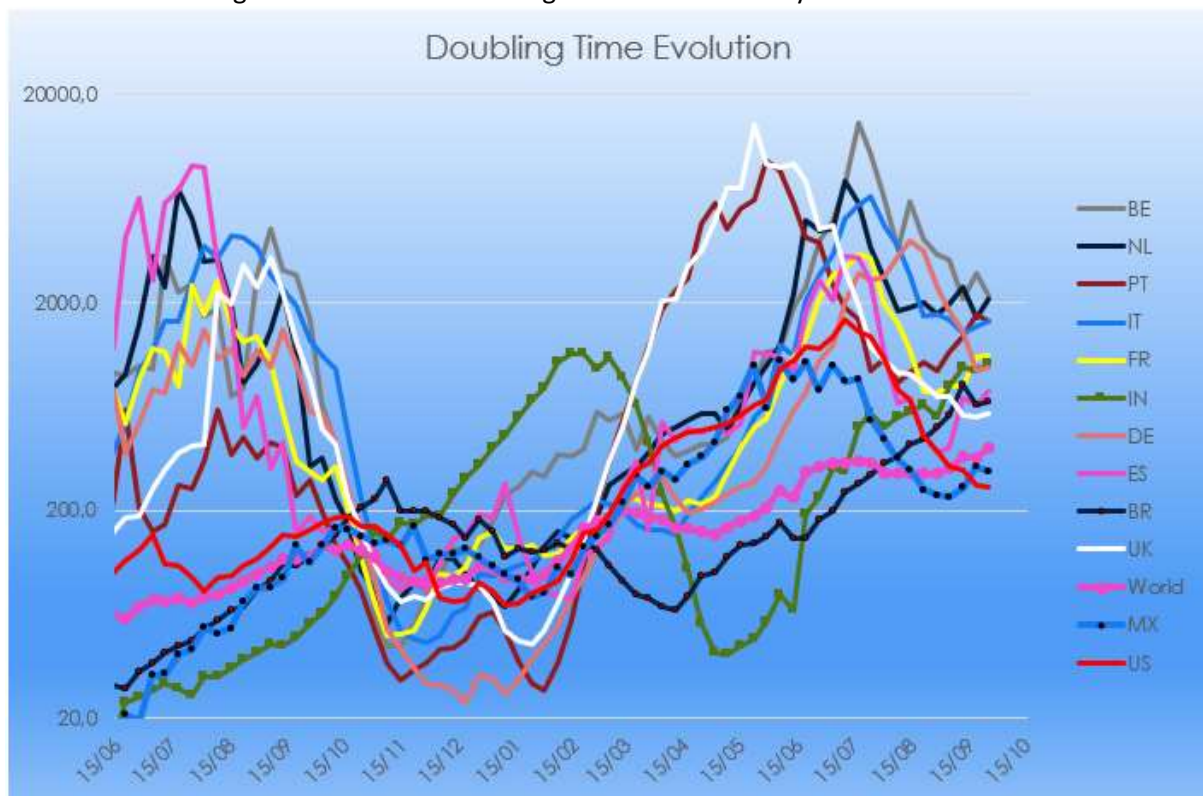
(Log y scale. Remember: Shorter doubling times equate to a faster evolution of the disease.)

EU Test Comparisons

Warning: National data on testing are not really comparable between countries, but do reveal trends in individual countries [6].

Daily New Cases per 1M of population
(7-day moving mean)
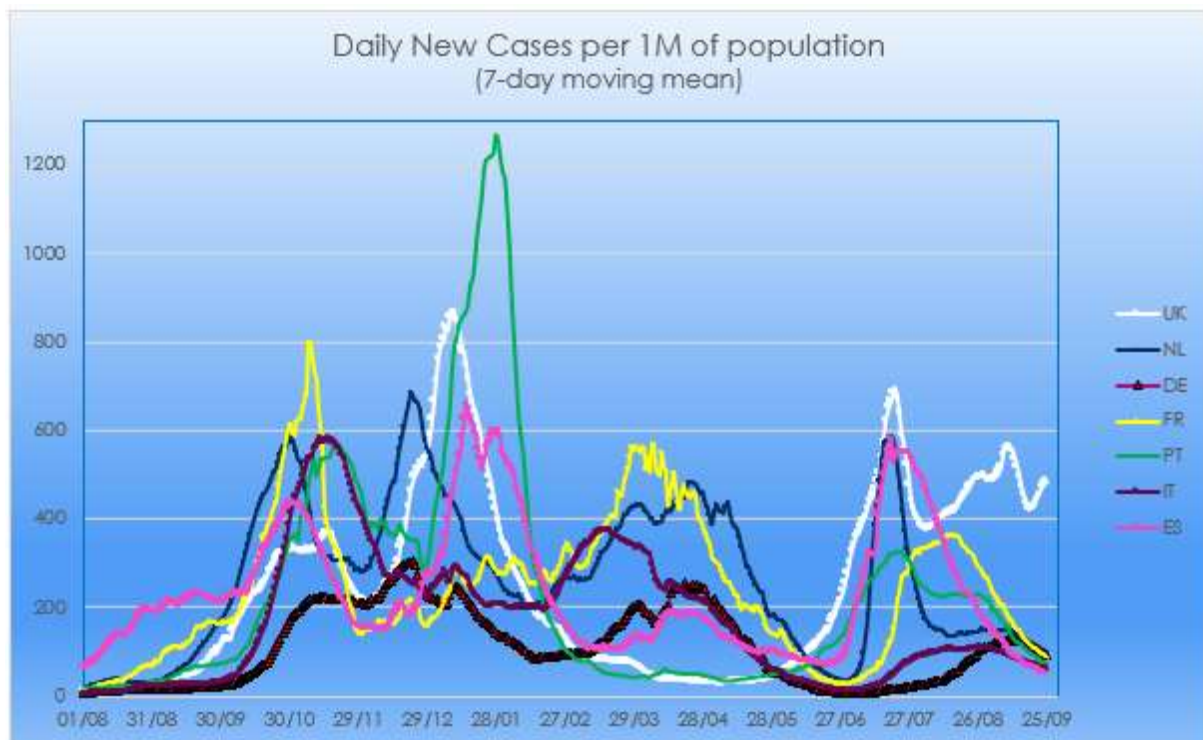
(Log plot!)
All countries continue falling, except for the UK were cases have been rising again in the past week.
And the UK remains way above the others which have very similar per-capita rates.

Vaccinations against COVID-19 [4]
Note: The denominator in the metrics displayed below is the *total* population of the country, and not the population *eligible* for vaccination (which is the denominator most frequently used in data published by national authorities).

Share of people who received at least one dose of COVID-19 vaccine
Total number of people who received at least one vaccine dose, divided by the total population of the country.
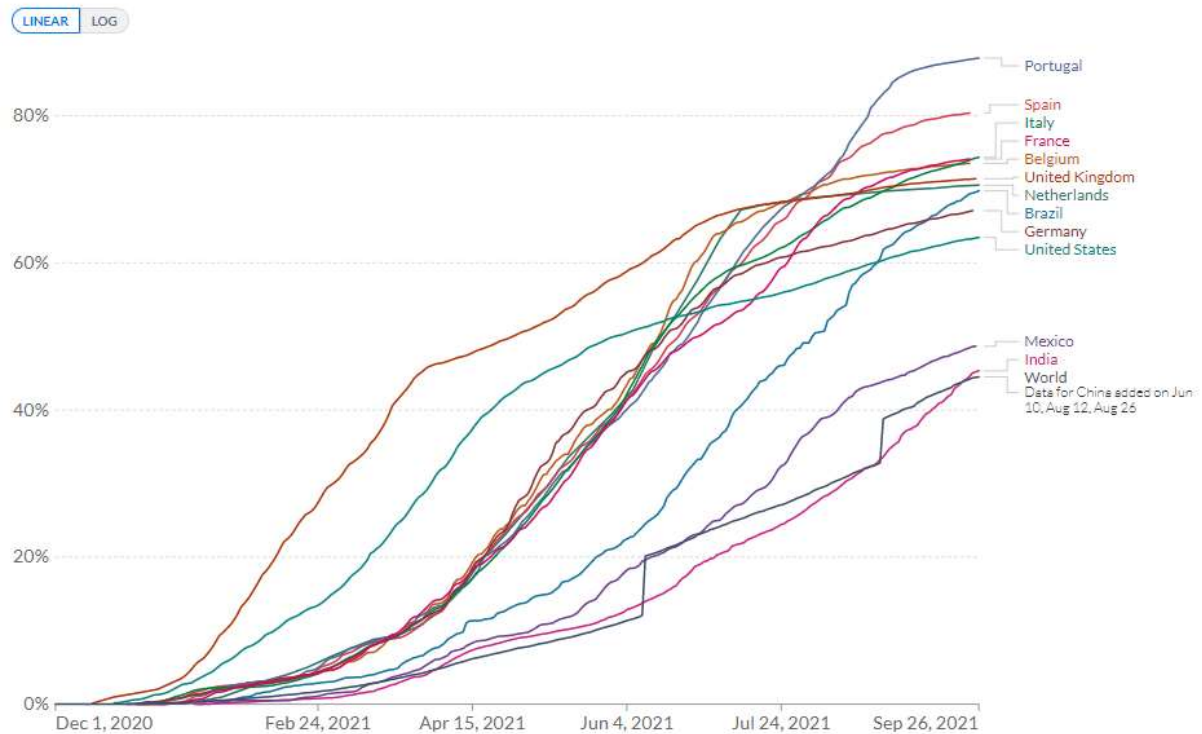
Source: Official data collated by Our World in Data.

CC BY

IT moves ahead of FR.
IN has now exceeded the World average.

Share of people vaccinated against COVID-19, Sep 26, 2021
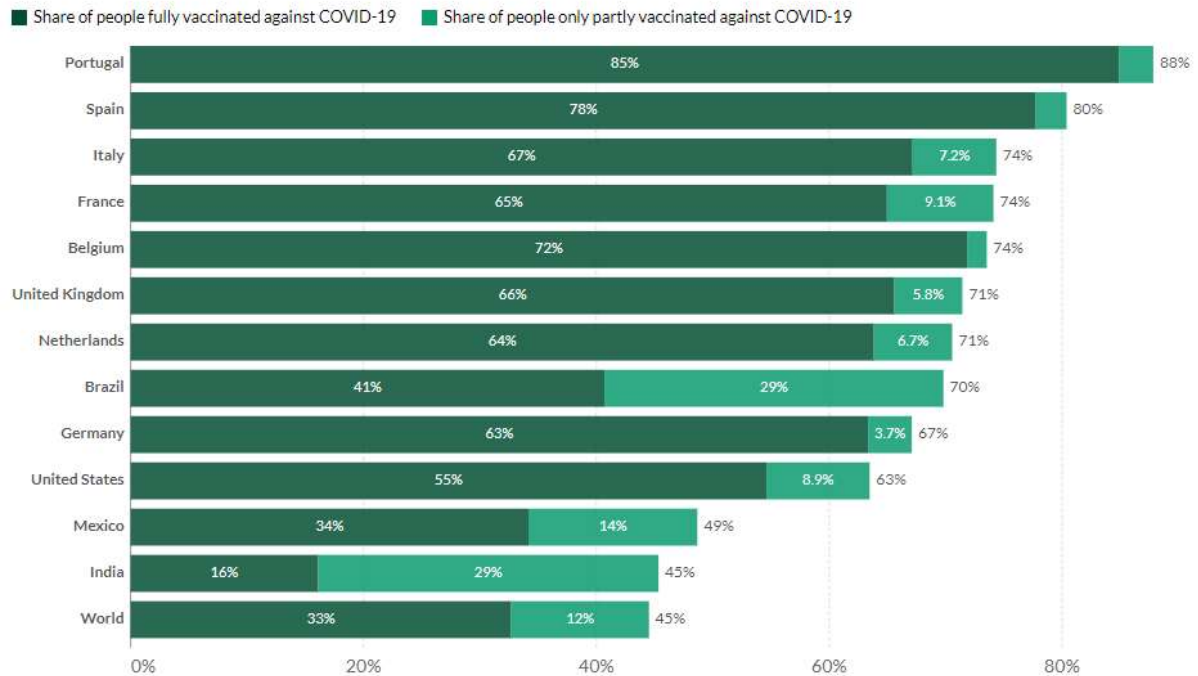
Alternative definitions of a full vaccination, e.g. having been infected with SARS-CoV-2 and having 1 dose of a 2-dose protocol, are ignored to maximize comparability between countries.

■ Share of people fully vaccinated against COVID-19   ■ Share of people only partly vaccinated against COVID-19

Country	Fully vaccinated	Partly vaccinated	Total
Portugal	85%		88%
Spain	78%		80%
Italy	67%	7.2%	74%
France	65%	9.1%	74%
Belgium	72%		74%
United Kingdom	66%	5.8%	71%
Netherlands	64%	6.7%	71%
Brazil	41%	29%	70%
Germany	63%	3.7%	67%
United States	55%	8.9%	63%
Mexico	34%	14%	49%
India	16%	29%	45%
World	33%	12%	45%

Source: Official data collated by Our World in Data. This data is only available for countries which report the breakdown of doses administered by first and second doses in absolute numbers.
CC BY

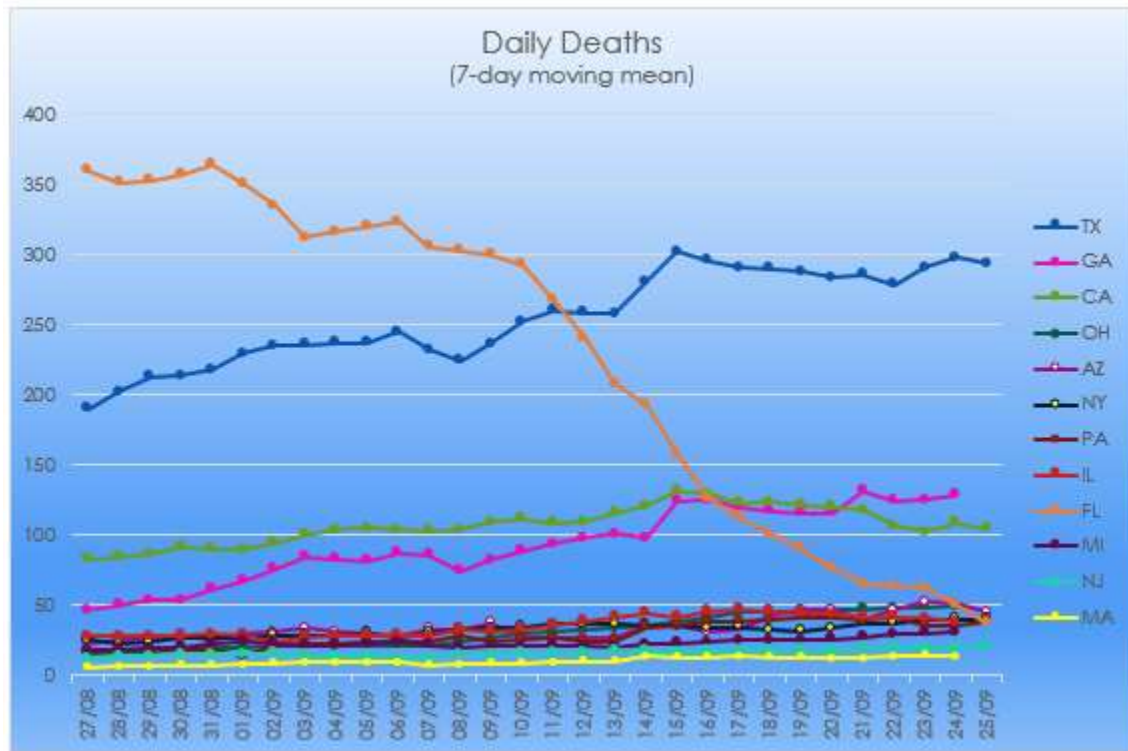**US States Focus** (Top 12 states by cumulative deaths)
Comparative Daily Death Toll evolution since each state's Day0 [1].

Comparative Daily Death-Toll Evolution
(7-day moving mean)
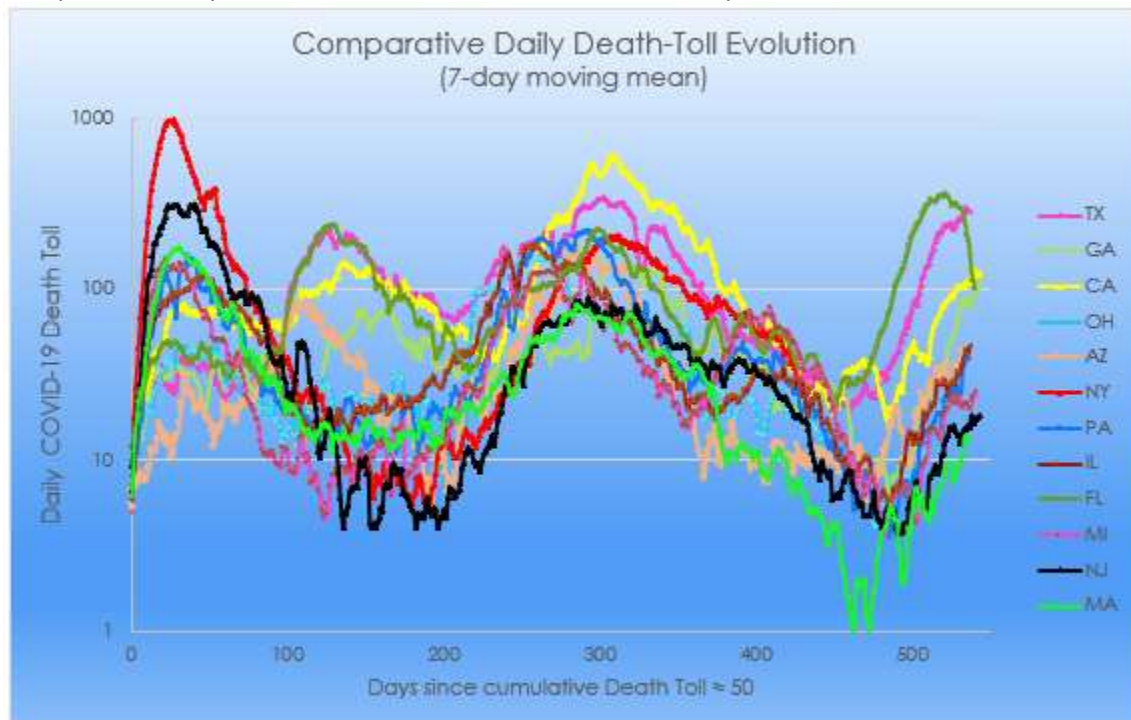
(Log scale!)

Comparative Daily Death Toll evolution over the past 30 days:

Daily Deaths
(7-day moving mean)

(Linear y scale)
Comments apply to both of the above graphs.
Remarkable decline in the FL death rate.
(FL historical data continue to be revised substantially & regularly. It's a real pain!)
TX rates remain way ahead of the other states.
CA & GA also stand out cf. the other states.
The Top 10 states contributing to the national death toll over the past week are:

Top 10 Avg Daily Death Tolls	
Texas	294
Georgia	129
Alabama	116
California	105
North Carolina	70
Tennessee	69
South Carolina	67
Ohio	50
Louisiana	46
Arizona	46
Top10	991
USA	2 071
	48%

Cumulative death toll for the top 33 US states:
IL moves ahead of NJ; SC ahead of MO & OK & KY ahead of CT.

Cumulative Death Toll by State
Top 33 states by no. of deaths

RoUS; 56888
KS; 5981
IA; 6482
NV; 7015
WA; 7542
AR; 7575
CO; 7800
MN; 8142
CT; 8483
KY; 8492
OK; 8715
WI; 8794
MS; 9425
MD; 10369
MO; 11822
SC; 12080
VA; 12557
AL; 14022
LA; 13741
TN; 14825
IN; 15377
NC; 16108
MA; 18541
AZ; 19806
OH; 21820
MI, 22214
GA; 25478
NJ; 27323
IL; 27440
PA; 29189
FL; 53124
NY; 55693
TX; 64420
CA; 68775

USA Total:
706 058
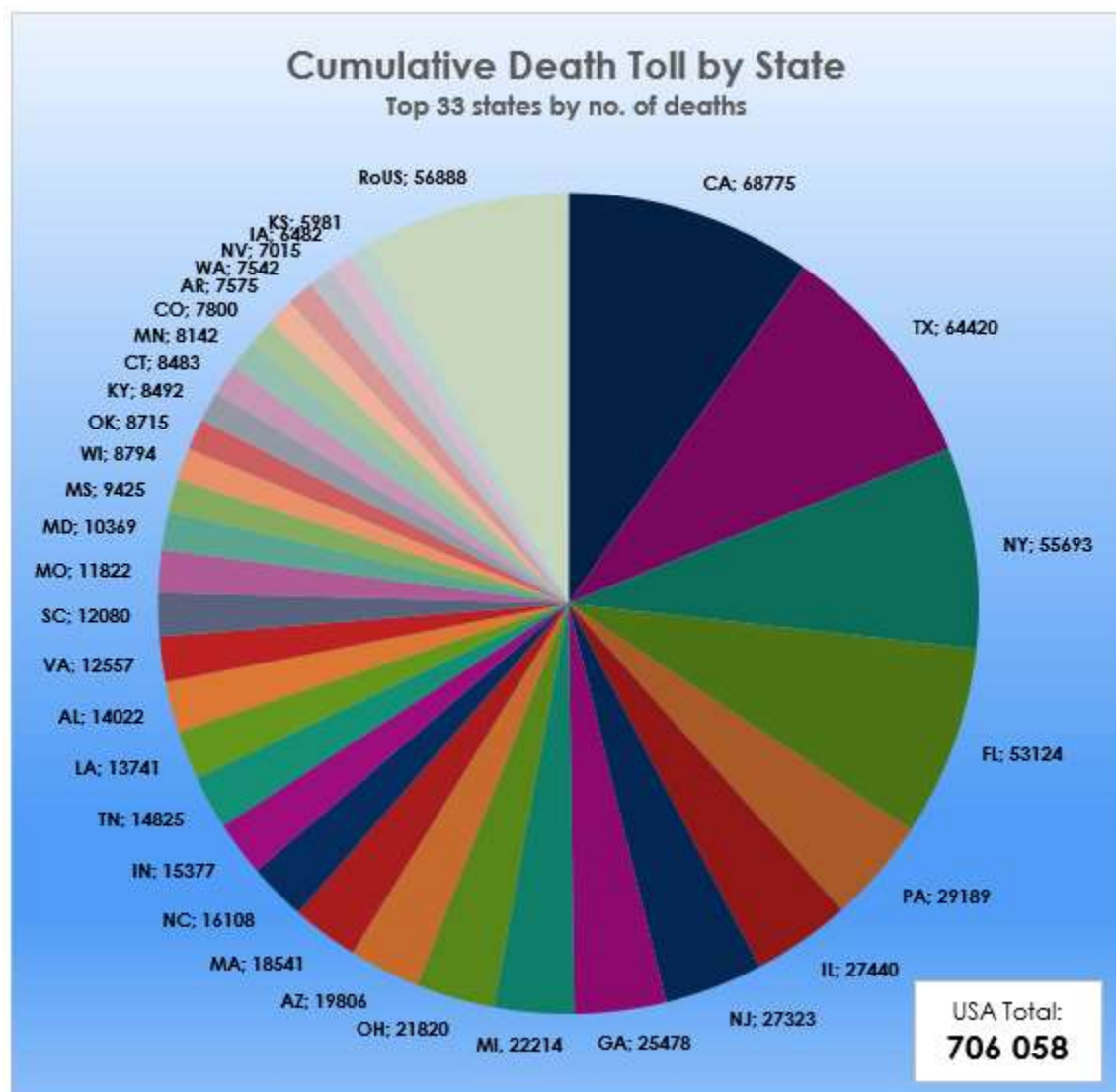
Per capita (for all 50 states):

COVID-19 Deaths/100K population
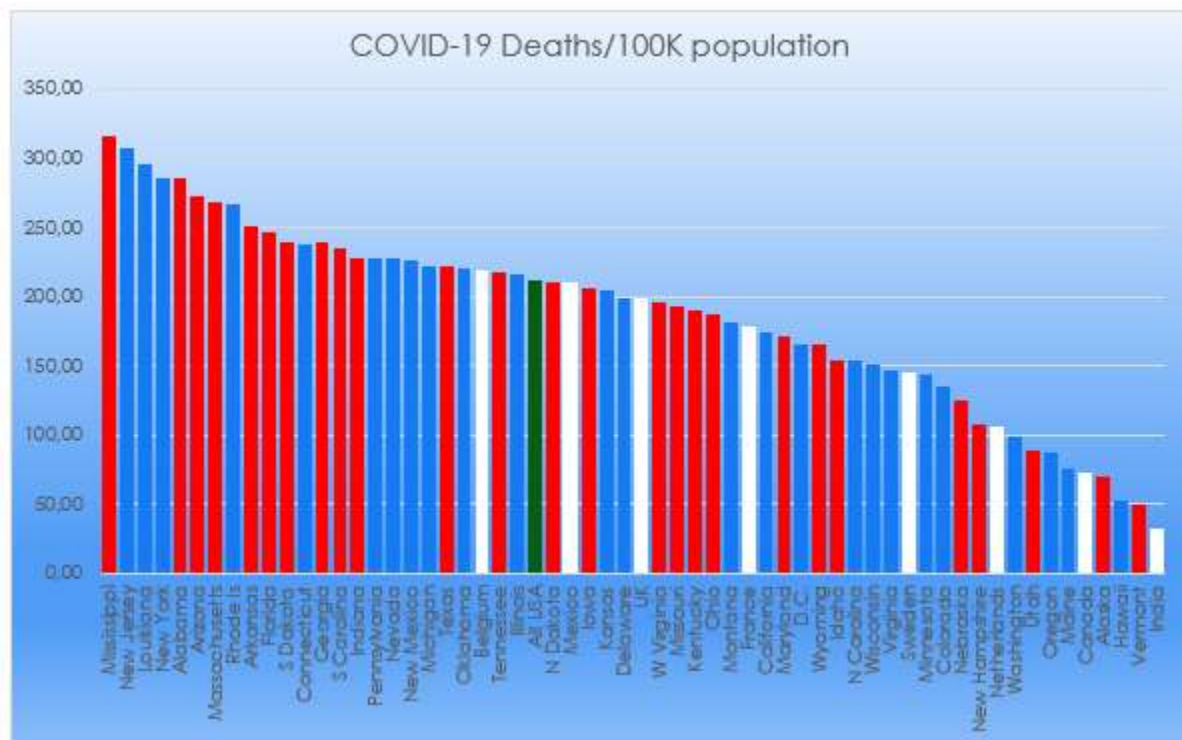
Moving left: FL, SC, IN, NV, TX, OK, TN, WV, ID & NC. (again)

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)			
					25 Sep	18 Sep	11 Sep	04 Sep
AZ	20 Mar 20	554	04 Apr 20	539	259 days	280 days	394 days	365 days
CA	04 Mar 20	570	24 Mar 20	550	401 days	334 days	373 days	393 days
FL	06 Mar 20	568	27 Mar 20	547	1285 days	1329 days	325 days	287 days
GA	14 Mar 20	560	20 Mar 20	554	106 days	114 days	154 days	153 days
IL	17 Mar 20	557	28 Mar 20	546	468 days	380 days	472 days	567 days
MA	20 Mar 20	554	29 Mar 20	545	655 days	750 days	1066 days	995 days
MI	18 Mar 20	556	25 Mar 20	549	379 days	477 days	605 days	526 days
NJ	10 Mar 20	564	24 Mar 20	550	805 days	895 days	974 days	1170 days
NY	14 Mar 20	560	20 Mar 20	554	862 days	1140 days	967 days	1232 days
OH	18 Mar 20	556	31 Mar 20	543	256 days	276 days	417 days	622 days
PA	18 Mar 20	556	30 Mar 20	544	448 days	391 days	628 days	676 days
TX	16 Mar 20	558	30 Mar 20	544	126 days	127 days	141 days	148 days

Slight improvement for: IL, PA & CA. Deterioration or little change for all other states.
Worst cases: Still GA & TX.

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

Doubling Time Evolution

(Log plot! – Remember longer doubling times are preferable.)
General decline since early July continues – except for FL.

Next update on next Sunday.

Keep well & keep safe!

David

Today's images: Chantal sent in these images from her recent stay in Barcelonnette in the French Alps.
First the Alps as seen from the town.
The peak in the centre is the *chapeau de gendarme*, and on the right the *pain de sucre.*

The nearby Lac de Serre-Ponçon:

And the capped earth pillars known as the *demoiselles coiffées*.

Please keep sending me your images for this space…

Notes

[0] The national COVID-19 data are taken from the **worldometer** website 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 17th May 2020! This occurred on 14th January 2021.
- Some countries, notably Sweden & Spain, regularly update the entire set of historical data provided to the website. Other counties, e.g., UK & USA, do the same but more rarely.

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

[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.**