COVID-19 Biweekly Newsletter
Issue N° 126, Wednesday, 2021-05-12
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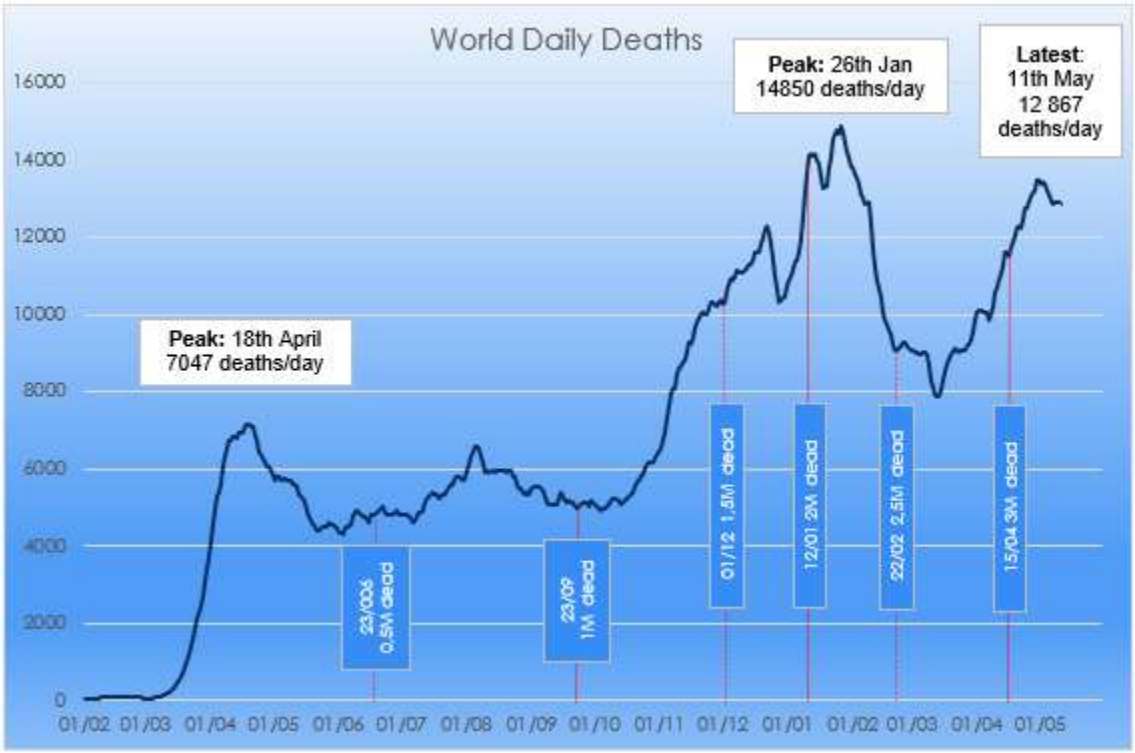
Contents: Global overview / National comparisons / EU Test Comparisons / US States focus / NYC/LI status / Today's image: Lost in a wheatfield / [Notes]

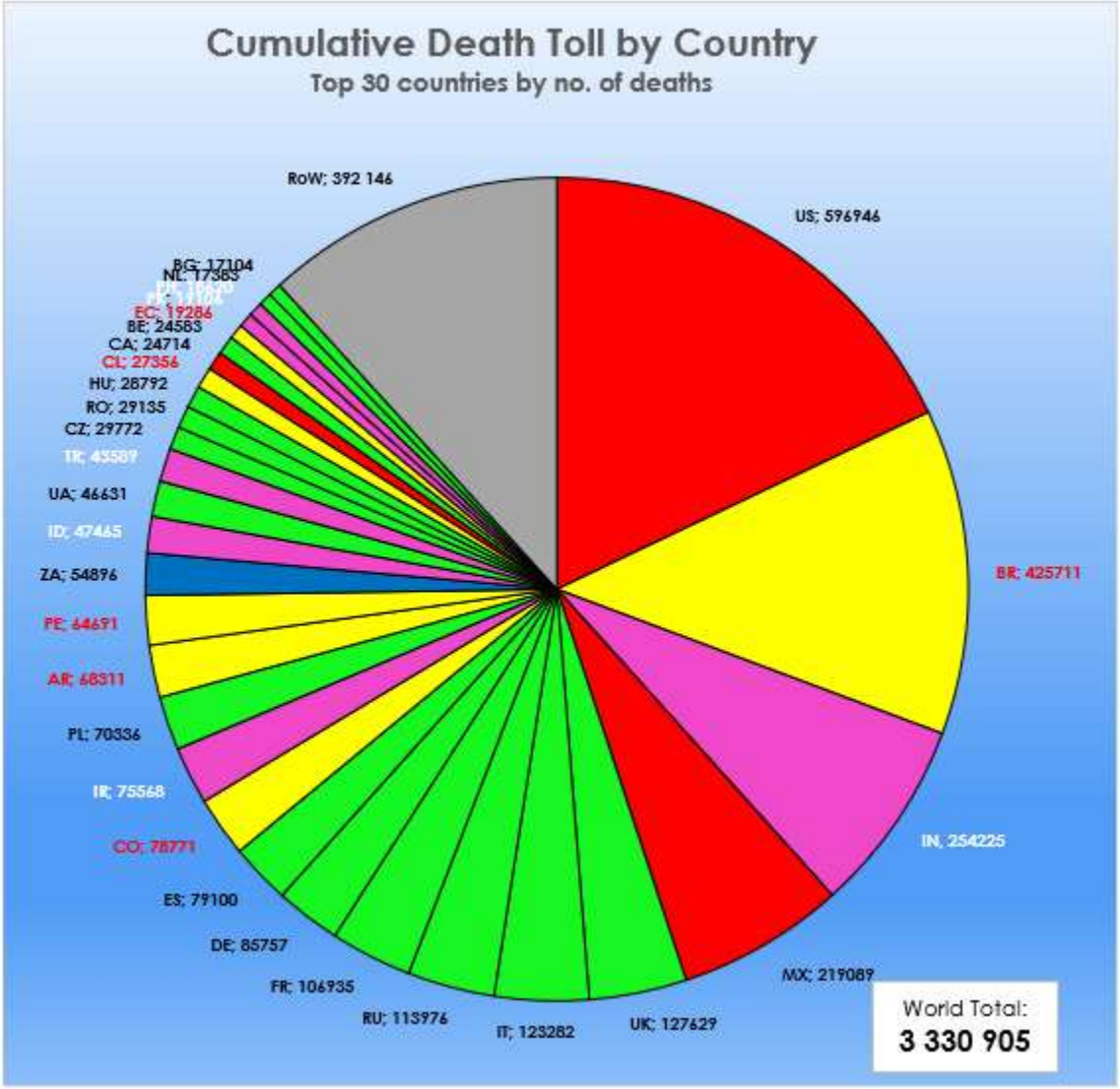
This will be the last mid-week report. From next Sunday the Newsletter will appear weekly.

Global overview: [0]
Since last time:

- Daily death rate peaked a week ago, and had been falling, but is now static.
- India declares its highest single-day no. of deaths – 4200 - yesterday.
  Only the US (in January) has registered greater numbers.

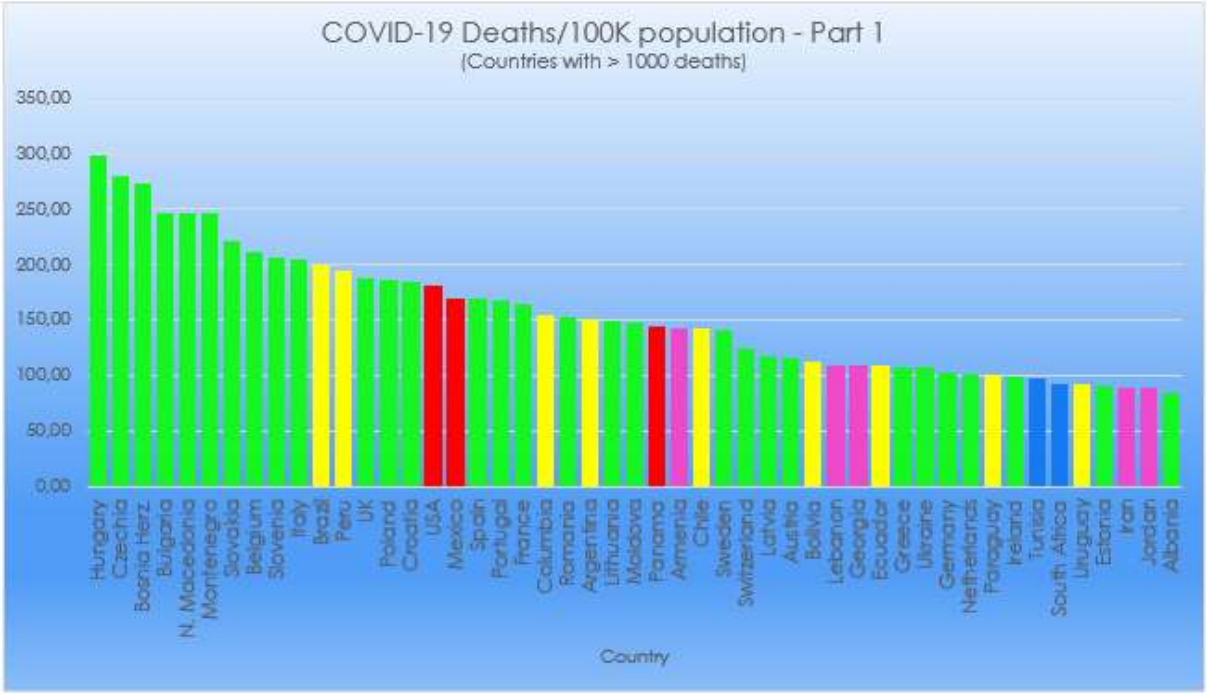


Cumulative death tolls for the top 30 countries [0]: N. America, S. America, Europe, Asia, & Africa
Bulgaria enters the Top 30 (displacing Portugal):



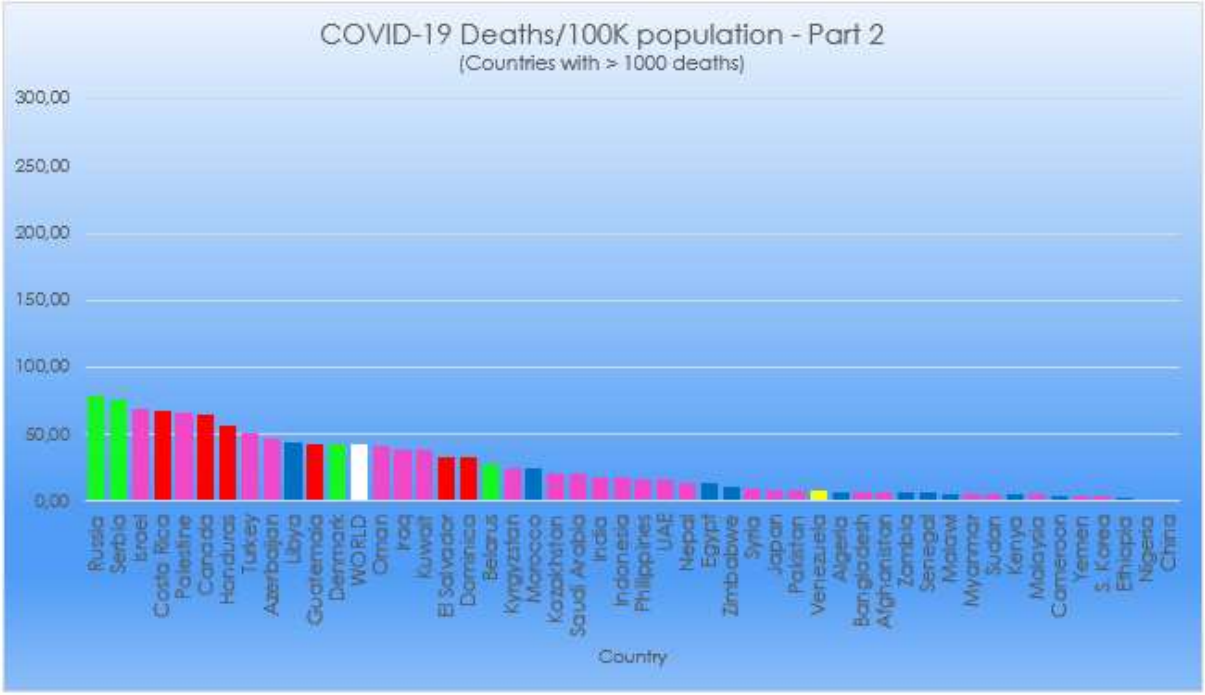
Amongst the other >1000-death countries not shown above, there are a few upward changes in ranking: JP, HR, PY, GE, NP (again), SD & SY.

Per-capita death rates for all 98 countries with >1000 deaths:
The top half is dominated by European countries



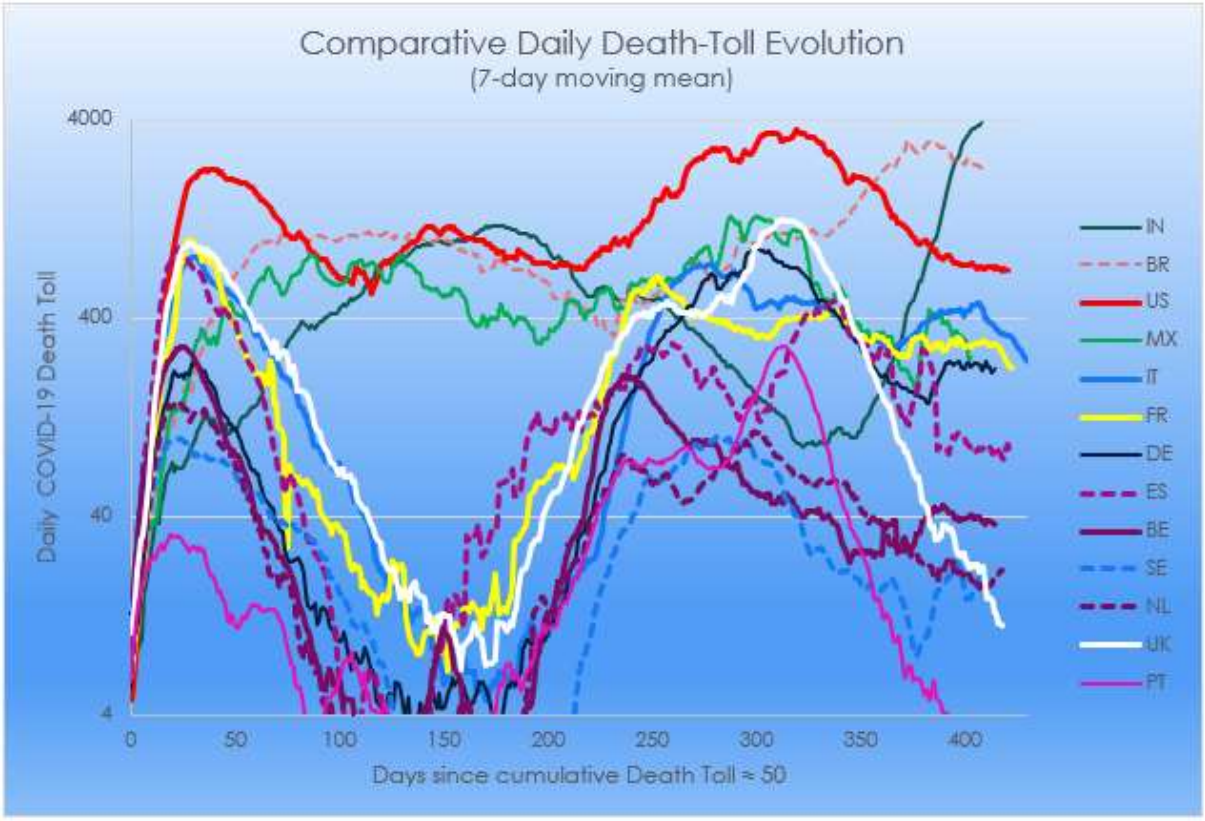
Moving left: BG, MK, AR, GE, GR, PY, UY & IR. (again)

The bottom half is more of a mixture:



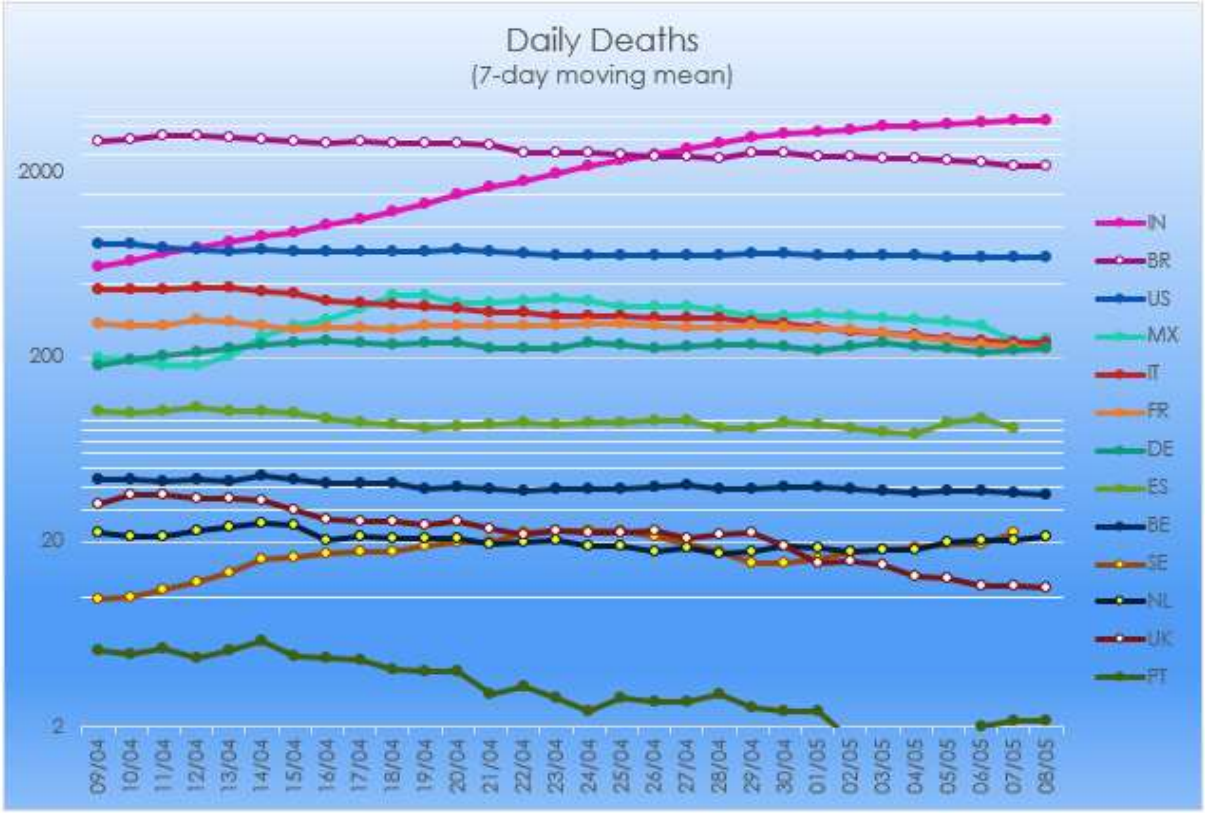
Movement to the left in Part 2: Just GT & NP.

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:

- IN continues to rise. So is NL recently.
- The other countries are flat or declining.

– Over the last 2 weeks, IT & FR have dropped from above 300 deaths/day to close to 200/day.

Tendencies: Comparison of time scales [2, 3]

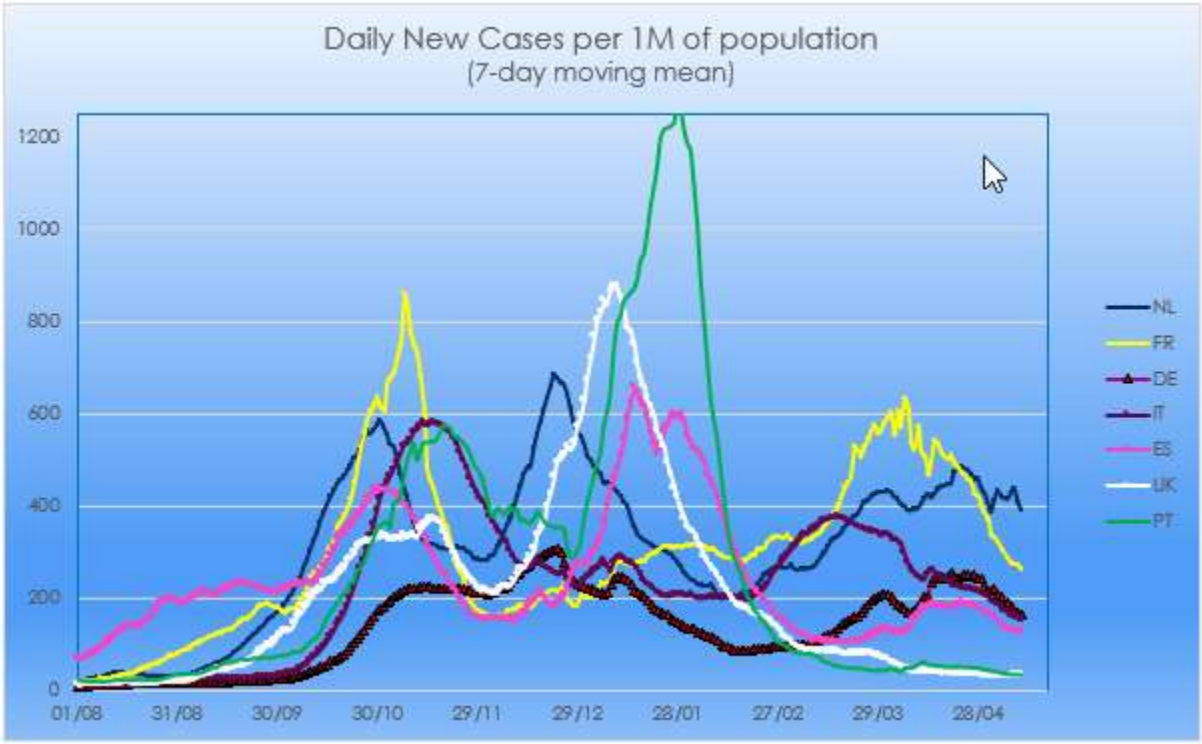
Double digits, triple+shortening, triple, quadruple

Country	1st death	Days since 1st death	"Day0"	Days since "Day0"	Doubling time (7-day fits)		
					11 May	08 May	04 May
IT	21 Feb	445	02 Mar	435	415 days	331 days	356 days
FR	15 Feb	451	11 Mar	426	353 days	304 days	311 days
ES	03 Mar	434	11 Mar	426	762 days	466 days	822 days
US	29 Feb	437	13 Mar	424	718 days	523 days	649 days
UK	05 Mar	432	16 Mar	421	10493 days	7014 days	8714 days
NL	06 Mar	431	17 Mar	420	571 days	485 days	665 days
DE	09 Mar	428	19 Mar	418	321 days	239 days	298 days
BE	11 Mar	426	20 Mar	417	473 days	444 days	457 days
SE	11 Mar	426	24 Mar	413	666 days	457 days	570 days
BR	17 Mar	420	24 Mar	413	167 days	119 days	134 days
PT	16 Mar	421	25 Mar	412	7168 days	4515 days	9984 days
IN	12 Mar	425	26 Mar	411	42 days	41 days	42 days
MX	19 Mar	418	31 Mar	406	627 days	603 days	481 days
World	11 Jan	486	25 Jan	472	185 days	166 days	178 days

– (compare 11/05 data with 04/05 data [3]).
– PT & UK continue to show excellent results.
– All countries improving, except for NL & ES.
– Poorest performance: IN - but not getting worse.

EU Test Comparisons

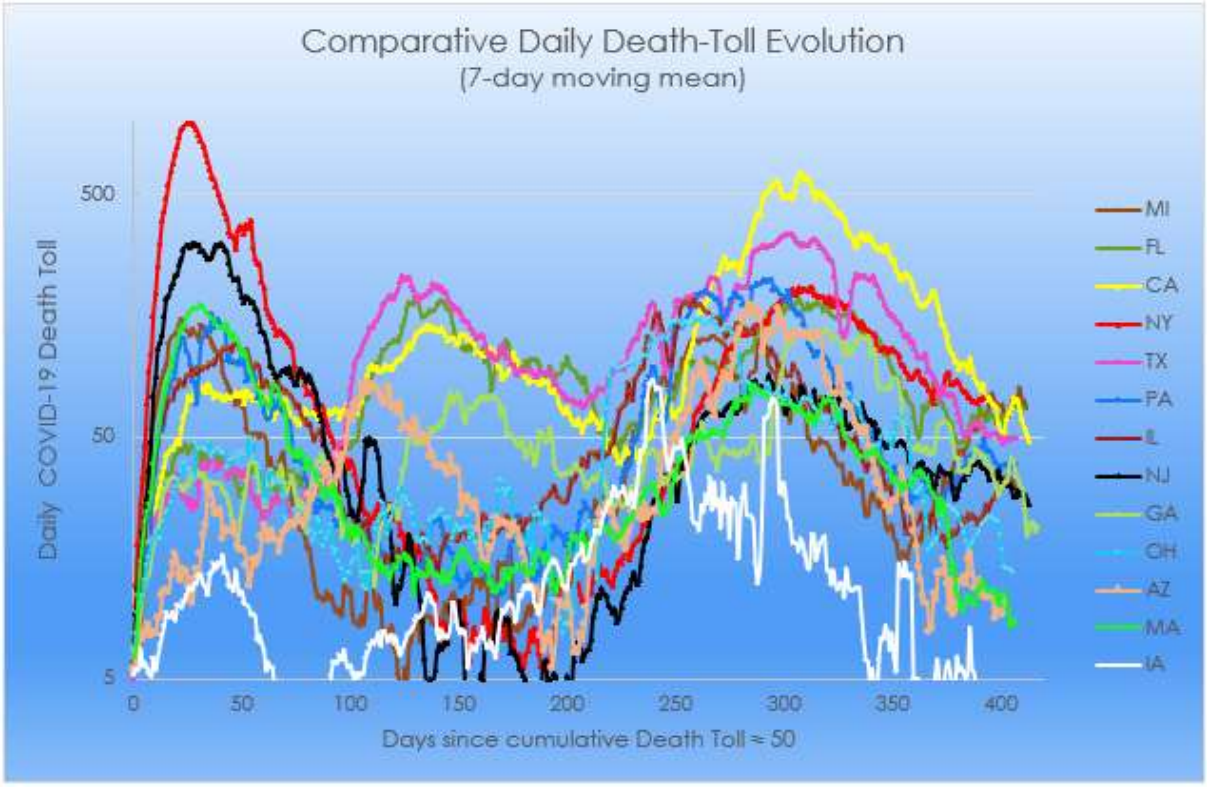
Warning: National data on testing are not really comparable [6].



FR rate continues to decline rapidly.
NL recently oscillating.
PT & UK are gratifyingly low.

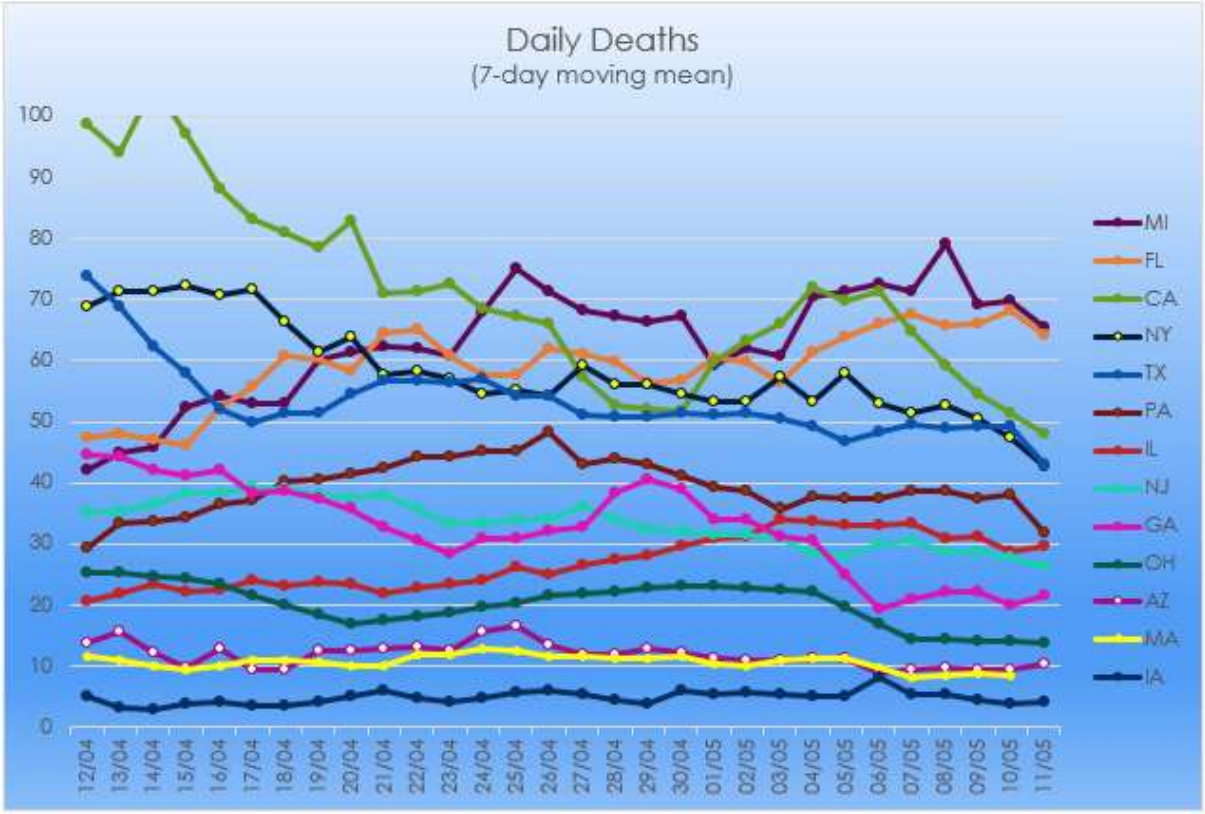
US States Focus (selected states)

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



(Log scale!)

Comparative Daily Death Toll evolution over the past 30 days:

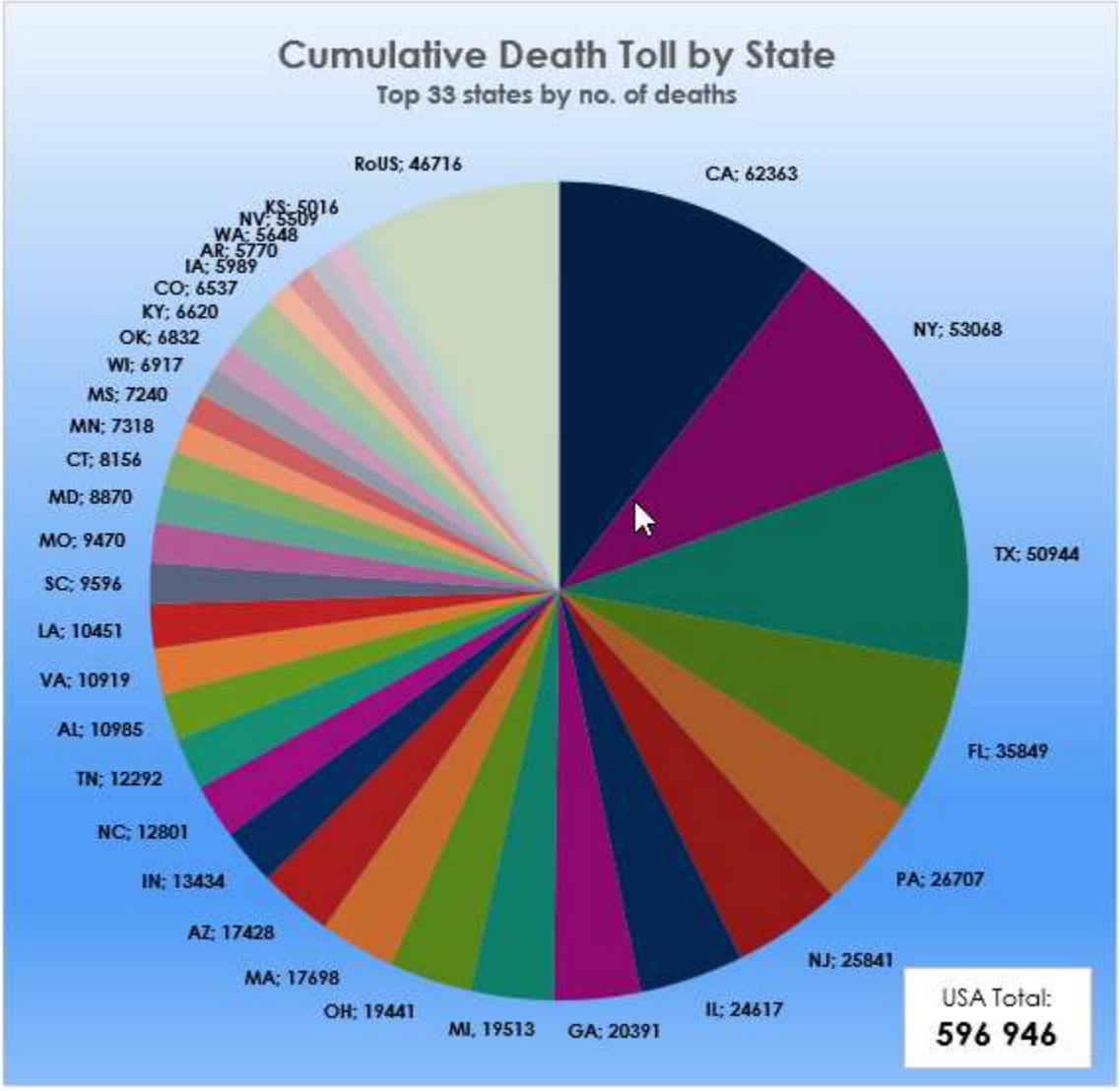


(Linear scale)

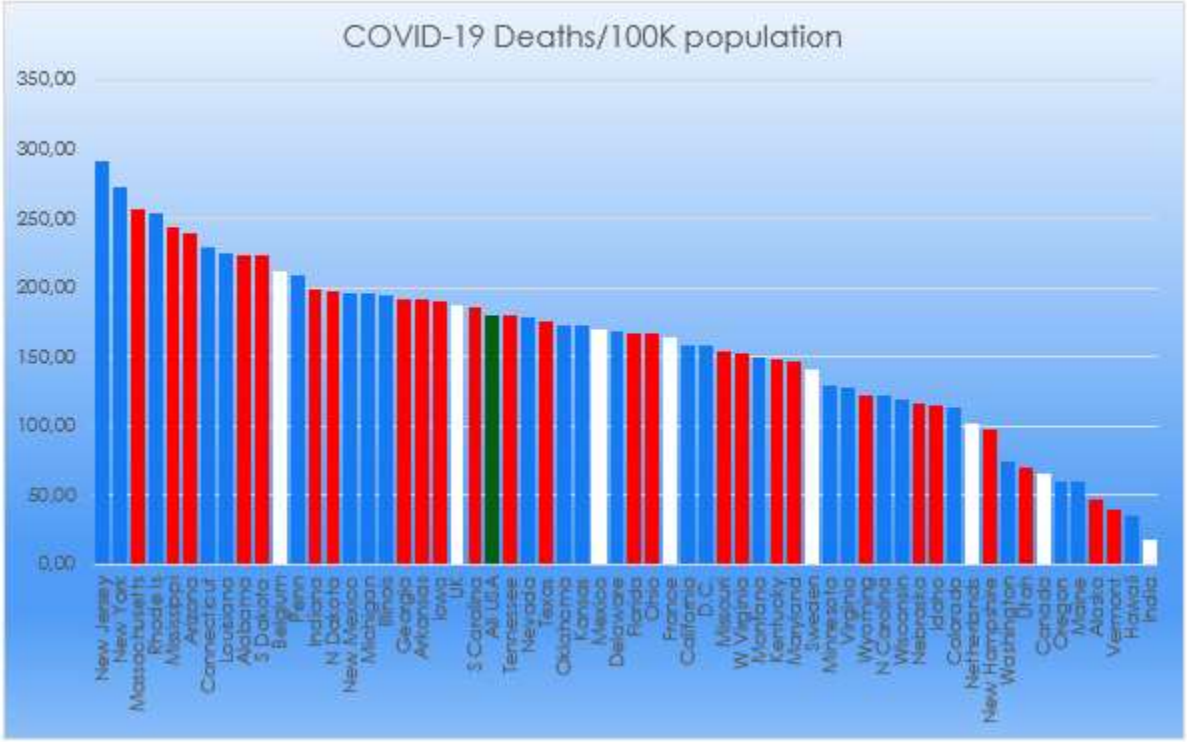
Comments apply to both of the above graphs:

- CA is dropping back down, after rising back up again.
- MI & FL now registering the highest average daily death rates.

Cumulative death toll for the top 33 US states:
MI overtakes OH:



Per capita (for all 50 states):



No changes in ranking.

Tendencies: Comparison of time scales [2, 3]

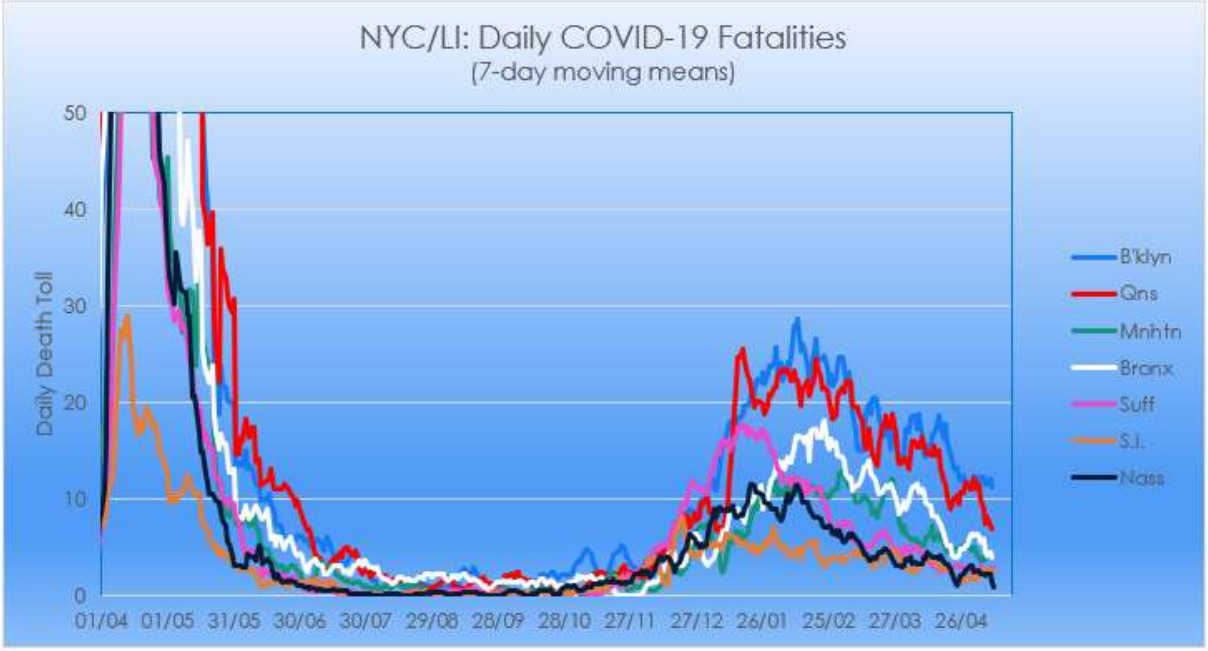
Double digits, triple+shortening, triple, quadruple

State	1st death	Days since 1st death	"Day0"	Days since "Day0"	Doubling time (7-day fits)		
					11 May	08 May	04 May
AZ	20 Mar	417	04 Apr	402	1103 days	1143 days	1060 days
CA	04 Mar	433	24 Mar	413	962 days	697 days	579 days
FL	06 Mar	431	27 Mar	410	427 days	319 days	428 days
GA	14 Mar	423	20 Mar	417	740 days	531 days	665 days
IA	24 Mar	413	15 Apr	391	1247 days	810 days	759 days
IL	17 Mar	420	28 Mar	409	603 days	523 days	503 days
MA	20 Mar	417	29 Mar	408	1571 days	1421 days	1143 days
MI	18 Mar	419	25 Mar	412	215 days	163 days	191 days
NJ	10 Mar	427	24 Mar	413	864 days	519 days	744 days
NY	14 Mar	423	20 Mar	417	895 days	701 days	658 days
OH	18 Mar	419	31 Mar	406	968 days	579 days	673 days
PA	18 Mar	419	30 Mar	407	603 days	396 days	604 days
TX	16 Mar	421	30 Mar	407	788 days	601 days	827 days

- (compare 11/05 data with 04/05 data [3]).
- Mostly improvement: 3 states in quadruple digits; 4 others very close behind.
- Only real deterioration is TX.
- Poorest performance: still MI, but improving slightly.

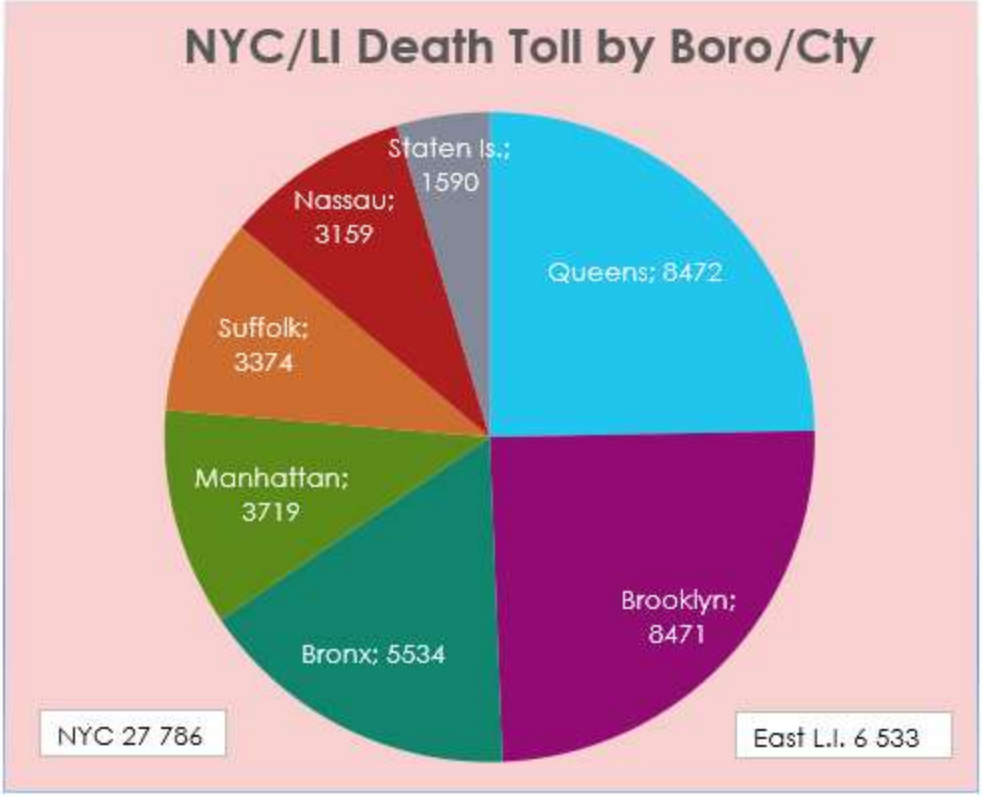
NYC/LI status

Average daily death rates for the 5 boroughs & 2 counties:



The second peak is past.

Cumulative death tolls: Brooklyn & Queens identical:



Next update on Sunday.

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

David

Today's image:

Thanks to those who have sent me some images to share with my readership.
Keep them coming… 😊

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

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

[3] Saw-tooth effect: Doubling times published in the Wednesday report (extracted from Wed-Tue datapoints) are systematically longer than doubling times published in the Sunday report (extracted from Sun-Sat datapoints). This is associated with weekend reporting delays.

[4] 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.

[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://www.nytimes.com/interactive/2020/us/coronavirus-us-cases.html#states

[6] **Testing policies vary widely & unpredictably both regionally and in time.**
(The only reason I include these data is because they influence government policy for some govts.)