

A Review of Covid-19: February to July 2020

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Abstract— More than 650 000 persons died in 2020 from February to July due to the Covid-19 virus. This worldwide pandemic, in reach and effect, has no parallel in living memory, with approximately 18 million individuals confirmed as infected. Therefore, it is opportune to assess data derived over 169 days from February to July 31, 2020. The source data for this paper was from publicly available information on the internet.

Index Terms— pandemic, no parallel in living memory, reach, effect.

I. INTRODUCTION

To compare the effect of Covid-19 in different countries, territories, and regions of the world, requires a common approach and a standard reference. The researcher used epidemiological data to understand the pandemic's effect and appreciate the challenge that each country faced in regards to having appropriate capabilities to address and for effective control of the spread. Simple descriptive statistics to reference the data will enable an average person to appreciate the effect of Covid-19 and induce appropriate preventative actions (Kucharski et al., 2020). In this study, there are no medical implications or assumptions (Rothan & Byrareddy, 2020).

As of July 31, 2020, the United States has been the worst affected country in terms of the number of infections (~ 4.7M) and the number of fatalities (~150k). The population of the United States is approximately 331M. French Guiana, is a South American nation of 299k inhabitants. The number of infections and fatalities in French Guiana has been ~ 7.7k and 43, respectively. A common strategy as a reference framework allowed for statistical examination and comparison of the experiences in these two countries. The number of infections per million population was one parameter used. Another parameter was the number of fatalities per million population. These worked out as ~ 14.4k/M infections and ~477/M deaths for the United States and ~26.3k/M infections and ~144/M deaths for French Guiana. Similar comparisons occurred for each country where data was available. Further, a graphical, time-stamped, representation of the countries with the infections/M > 1000, and deaths/M > 100 was done daily throughout the exercise. That way, the number of countries where the pandemic progressively worsened became apparent.

II. DATA REVIEW

From Figure 1.0., as of April 20, 2020., there were 15 countries where the cases/M and deaths/M were higher than 1000 and 100, respectively. San Marino, Andorra,

Luxembourg, Spain, Belgium, Switzerland, Ireland, Italy, Channel Islands, France, USA, Netherlands, UK, Sint Maarten, and Sweden.

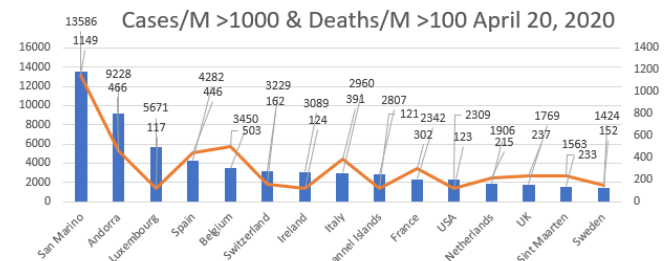


Figure 1.0. April 20, 2020

By May 06, 2020, there were another five countries on the list. These were, Figure 2.0, the Isle of Man, Portugal, Monserrat, Bermuda, and Canada.

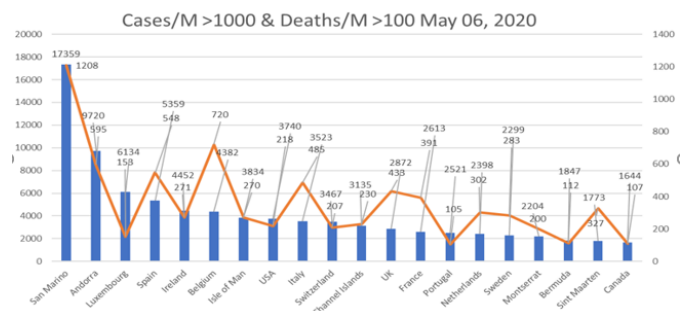


Figure 2.0 May 06, 2020

Figure 3.0 shows how the pandemic became much more widespread and severe by July 31, 2020. There are a total of 38 countries represented in this graph.

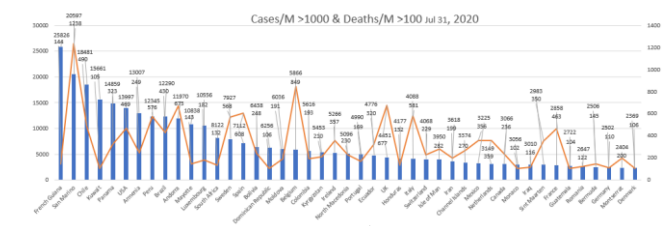


Figure 3.0 July 31, 2020

French Guiana, Chile, Kuwait, Panama, Armenia, Peru, Brazil, Mayotte, South Africa, Bolivia, Dominican Republic, Moldova, Columbia, Kyrgyzstan, North Macedonia, Honduras, Ecuador, Iran, Iraq, Mexico, Guatemala, Romania, Germany, Monaco, and Denmark joined this list.

III. NORTH AMERICA

Also done is a similar comparison for the different states in the US and Canada. In the case of Canada, the entire country data was lumped together for this comparison.

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Figure 4.0 shows the actual number of infections and deaths. In several states, California, Florida, New York, New Jersey, Texas, and others, the severity of the Covid-19 Pandemic was higher than that of all of Canada and several countries worldwide.

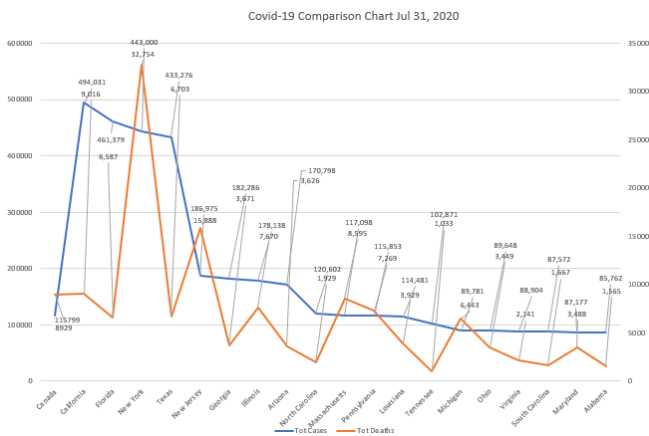


Figure 4.0 US States and Canada

Figure 5.0 shows the comparison of infections and deaths per million in the individual state where these values were higher than 1000 and 100, respectively.

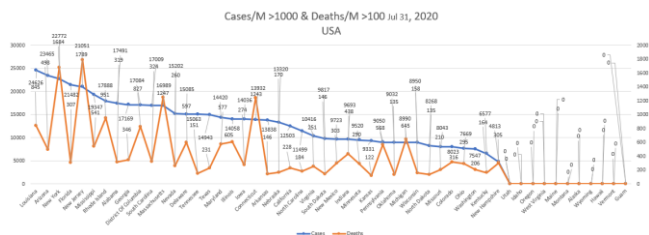


Figure 5.0 US States Severity of Outbreak

Louisiana has emerged as the state where the Cases/M population is higher than any other state in the USA (listed in Appendix 2). Arizona is second on that list. New York, New Jersey, Massachusetts, and Connecticut all have Cases/M and Deaths/M more than 1000. These rank with San Marino as the only place worldwide where this is true.

IV. SELECT FEW

A. Comparison

Table 1 shows that the USA, Brazil, India, South Africa, and Russia are major Covid-19 hotspots. The USA, Brazil, and India were selected based on the top three countries with most cases of infections. Spain and Italy are essential because of the early indication of problems and the challenges that other countries realized. Sweden and New Zealand are examples of countries that can explain how to handle Covid-19 and similar future pandemics. Haiti and French Guiana were smaller but similar in experience to Italy and Spain. Suriname and Trinidad and Tobago were selected because they were in the midst of national elections during the review period. The inclusion of Pakistan, Australia, Egypt, and the Dominican Republic was because each reflected the experience of other regional countries and the difficulties that country leaders faced in handling this unprecedented crisis.

Table 1 shows the Number of Days where the Daily Increase in Covid-19 Cases (169 Days from February 15, to July 31 2020) was recorded.

>100 denotes number of days where the new cases from day-to-day exceed 100.

>30k - number of days where the new cases from day-to-day exceed 30 000.

5-D Ave = Mean Value of new day-to-day cases for five days ending on July 31, 2020.

Table 1. Number of Days - Total Covid-19 Instances exceed Set Values

July 31 2020	>100	>500	>1k	>5k	>10k	>20k	>30k	>40k	>50k	>60k	>70k	Max	Date	5-D Ave***
USA	141	141	138	134	132	119	61	38	30	22	7	77978	24-Jul	66523
UK	143	134	90	9	0	0	0	0	0	0	0	7860	10-Apr	751
Egypt	119	70	41	0	0	0	0	0	0	0	0	1774	19-Jun	403
Pakistan	133	108	86	9	0	0	0	0	0	0	0	6825	14-Jun	1038
Australia	50	5	0	0	0	0	0	0	0	0	0	721	30-Jul	500
New Zealand	2	0	0	0	0	0	0	0	0	0	0	146	28-Mar	1
Sweden	138	67	15	0	0	0	0	0	0	0	0	1803	24-Jun	208
Suriname	1	0	0	0	0	0	0	0	0	0	0	110	29-Jul	42
French Guiana	30	0	0	0	0	0	0	0	0	0	0	355	04-Jul	93
Trinidad and Tobago	0	0	0	0	0	0	0	0	0	0	0	40	21-Mar	4
Haiti	30	0	0	0	0	0	0	0	0	0	0	332	06-Jun	23
Dominican Republic	122	47	23	0	0	0	0	0	0	0	0	2012	26-Jul	1348
Italy	158	86	64	10	0	0	0	0	0	0	0	6553	21-Mar	280
Spain	148	105	85	22	0	0	0	0	0	0	0	8271	25-Mar	2372
South Africa	114	86	72	39	22	0	0	0	0	0	0	13944	24-Jul	9550
Russia	129	122	116	102	12	0	0	0	0	0	0	11656	11-May	5499
India	126	122	108	76	55	32	18	12	5	0	0	57704	31-Jul	52207
Brazil	129	124	122	95	83	62	39	24	7	2	1	70869	29-Jul	49279

****ending July 31 2020

Only the USA and Brazil have experienced day-to-day increases in cases of 70k or more. That happened only once in Brazil, 70869, on July 29, 2020. It happened in the USA on seven occasions, with the highest daily increase being 77978. India saw a 5-day AVE increase in day-to-day new cases of more than 50k ending on July 31, 2020: only second to the USA. India has experienced five days, where the each day-to-day increase exceeded 50k. Brazil has had 7 >50k days and two days of more than 60k increase.

New Zealand has had only two days where the day-to-day increase was higher than 100. The peak increase was 146. The 5-Day AVE ending on July 31, 2020, was 1. This approach was in stark contrast to a diametric strategy, adopted in Sweden, to cope with Covid-19. Sweden has experienced a daily peak increase of 1803 (June 24, 2020) and a 5-Day AVE of 208 for the days ending on July 31, 2020.

Australia, Spain, and Italy experienced peak day-to-day changes in March. The UK had a similar experience in April. The instances of new day-to-day cases reduced afterward but never went away altogether. In fact, on July 31, 2020, Italy had a total of 12k individuals infected with Covid-19. There was a strong indication of a second wave beginning in Spain as the day-to-day increase infections were higher than 2k. The UK was experiencing a similar increase of approx. 800/day. In Australia, however, there was a second period of increased infections with a higher peak than on their March 2020 experience. On Jul 30, 2020, the day-to-day increase was 721. In March, this peak was 537. The 5-Day AVE ending on July 31, 2020, was 500. The current trend in Egypt is that the average daily new infections are reducing, but the low level of

400 is similar to the UK's experience. The low levels in Egypt, Russia, the UK, Spain, and Italy never went to a low enough level to inspire comfort and confidence in control.

B. Further Consideration

Table 2 shows the 5-Day AVE infections in the USA, ending on July 31, 2020, as 2.18M: the only country worldwide with more than a million individuals confirmed as being infected with Covid-19. In contrast, New Zealand had a 5-Day AVE of 22. The total infections in the USA exceed 1M for 86 days, and on 11 of those days, the actual infections exceeded 2M. Brazil and India exceed 500k infections on 38 and 5 days, respectively. New Zealand did not experience a total infection of more than 1k at any time during the 169 days from February to July. Australia had 66 instances where the total infections in the country were higher than 1k.

National elections in Suriname occurred in May 2020. Before this, the number of Covid-19 cases was less than 100. The total number of confirmed cases of Covid-19 as of July 31, 2020, in Suriname was 1607. Trinidad and Tobago had a similar experience before July when campaigning for their August 10, 2020, national elections began. The current trend in Trinidad and Tobago is almost parallel to what happened in Suriname.

For Table 2., an entry in the >1k column denotes the number of days where the total infections in the country exceed 1000. >100k - number of days where the total infections in the country exceed 100 000.

5-D Ave = Mean Value of total infections in the country for five days ending on July 31, 2020.

Table 2. Active Infections Per Country.

	>1k	>100k	>500k	>1M	>2M	Max	Date	5-D Ave ***	Population
USA	144	128	112	86	11	2221570	31-Jul-20	2178946	331M
UK	Data Unavailable								67.9M
Egypt	117	0	0	0	0	55230	22-Jul-20	51455	102.3M
Pakistan	130	15	0	0	0	108642	02-Jul-20	26076	220.9M
Australia	66	0	0	0	0	6879	31-Jul-20	6008	25.5M
New Zealand	0	0	0	0	0	929	06-Apr-20	22	4.8M
Sweden	Data Unavailable								10.1M
Suriname	0	0	0	0	0	578	29-Jul-20	551	587k
French Guiana	44	0	0	0	0	3088	08-Jul-20	1410	299k
Trinidad and Tobago	0	0	0	0	0	100	09-Apr-20	21	1.4M
Haiti	68	0	0	0	0	5099	22-Jun-20	2778	11.4M
Dominican Republic	124	0	0	0	0	33242	26-Jul-20	31808	10.8M
Italy	155	23	0	0	0	108165	19-Apr-20	12495	60.4M
Spain	Data Unavailable								46.7M
South Africa	128	28	0	0	0	173990	20-Jul-20	165028	59.7M
Russia	126	92	0	0	0	245580	15-Jun-20	194573	145.9M
India	125	61	5	0	0	567637	31-Jul-20	528421	1380M
Brazil	134	80	38	0	0	731209	26-Jul-20	685699	212.6M

***** ending July 31 2020

V. DISCUSSION

The USA, Brazil, and India's experiences are staggering and show how difficult, even the largest and best-prepared arrangements were not sufficient to prevent widespread infections and deaths. The USA is a reference upon which an overwhelming majority of the world nations pattern their systems and responses to disasters and emergencies. Even the USA was unprepared for the current Covid-19 pandemic.

Instances where the number (cumulative) of cases/M country population>1000 and the number (cumulative) of deaths/M country population>100 are on the table in Appendix 1. As of July 31, 2020, French Guiana was the country with the highest cases/M population worldwide. The population of French Guiana is 299k. The USA ranks 6th on this list. Brazil is in ninth place. It is notable that India, Pakistan, and Russia are not on this list as none of these have a death/M parameter >100 (India: Cases/M = 1194 & Death/M = 24; Pakistan: Cases/M = 1258 & Death/M = 27; and Russia: Cases/M = 5756 & Deaths/M = 96).

In the USA, Louisiana, with a population of ~ 4.7M, has an infection rate higher than any other state. Arizona, population ~ 7.3M, follows on that list. New York, New Jersey, Massachusetts, and Connecticut all have Cases/M and Deaths/M more significant than most countries worldwide. The US experience in this Covid-19 pandemic is worrisome and frightening. The lesser developed and financially restricted world will continue to follow the US response with interest as their ability to manage this crisis is an apt reflection of the eventual outcome worldwide.

The Trinidad and Tobago and Suriname national elections will likely be the opportunities for lessons to be learned and as a precursor for presidential elections in the USA due in November 2020. There are several indicators of the effects of the mass congregation of people, as happened in Suriname and Trinidad and Tobago. There were significant protests in the USA and elsewhere in response to the Covid-19 Lockdown and social outcry against police officers' actions in the USA. Lessons about how these impacted the infection rates and the ability to control those spread can become the best opportunities to understand the current dilemma fully and to prevent further exacerbation throughout the world.

Thus far, the message builds on an ability to recognize and understand the nature of the Covid-19 virus, spread prevention, individual and group behavioral modification, social support, and stress management. These are likely to remain fundamental to individuals who remain safe and not become sick or killed as medical experts search for a cure, and world leaders can make that cure available everywhere.

APPENDIX 1

Table 3. Cases/M country population>1000 and the number (cumulative) of deaths/M country population>100.

July 31, 2020	Tot Cases/1M>1000	Tot Deaths/1M>100
French Guiana	25826	144
San Marino	20597	1238
Chile	18481	490
Kuwait	15661	105
Panama	14859	323
USA	13997	469
Armenia	13007	249
Peru	12345	576

A Review of Covid-19: February to July 2020

Brazil	12290	430
Andorra	11970	673
Mayotte	10838	143
Luxembourg	10556	182
South Africa	8122	132
Sweden	7927	568
Spain	7112	608
Bolivia	6438	248
Dominican Republic	6256	106
Moldova	6036	191
Belgium	5866	849
Colombia	5616	193
Kyrgyzstan	5453	210
Ireland	5266	357
North Macedonia	5096	230
Portugal	4990	169
Ecuador	4776	320
UK	4451	677
Honduras	4177	132
Italy	4088	581
Switzerland	4068	229
Isle of Man	3950	282
Iran	3618	199
Channel Islands	3374	270
Mexico	3225	356
Netherlands	3149	359
Canada	3066	236
Monaco	3056	102
Iraq	3010	116
Sint Maarten	2983	350
France	2858	463
Guatemala	2722	104
Romania	2647	122
Bermuda	2506	145
Germany	2502	110
Montserrat	2404	200
Denmark	2369	106

New York	22772	1684
Florida	21482	307
New Jersey	21051	1789
Mississippi	19347	541
Rhode Island	17888	951
Alabama	17491	319
Georgia	17169	346
District Of Columbia	17084	827
South Carolina	17009	324
Massachusetts	16989	1247
Nevada	15202	260
Delaware	15085	597
Tennessee	15063	151
Texas	14943	231
Maryland	14420	577
Illinois	14058	605
Iowa	14036	274
Connecticut	13932	1243
Arkansas	13838	146
Nebraska	13320	170
California	12503	228
North Carolina	11499	184
Virginia	10416	251
South Dakota	9817	146
New Mexico	9723	303
Indiana	9693	438
Minnesota	9520	290
Kansas	9331	122
Pennsylvania	9050	568
Oklahoma	9032	135
Michigan	8990	645
Wisconsin	8950	158
North Dakota	8268	135
Missouri	8043	210
Colorado	8023	316
Ohio	7669	295
Washington	7547	206
Kentucky	6577	164
New Hampshire	4813	305
Utah	0	0

APPENDIX 2

The Table 4. Cases/M State population>1000 and the number (cumulative) of deaths/M State population>100

July 31, 2020	Tot Cases/1M>1000	Tot Deaths/1M>100
Louisiana	24626	845
Arizona	23465	498

Idaho	0	0
Oregon	0	0
West Virginia	0	0
Maine	0	0
Montana	0	0
Alaska	0	0
Wyoming	0	0
Hawaii	0	0
Vermont	0	0
Guam	0	0
Northern Mariana Islands	0	0
Puerto Rico	0	0
United States Virgin Islands	0	0
Veteran Affairs	0	0
US Military	0	0
Federal Prisons	0	0
Navajo Nation	0	0
Grand Princess Ship	0	0
Wuhan Repatriated	0	0
Diamond Princess Ship	0	0

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