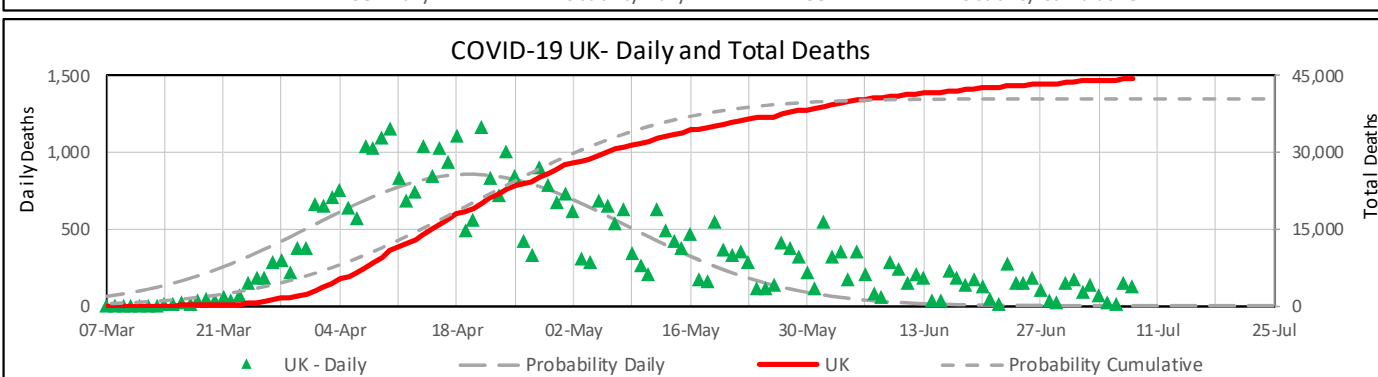
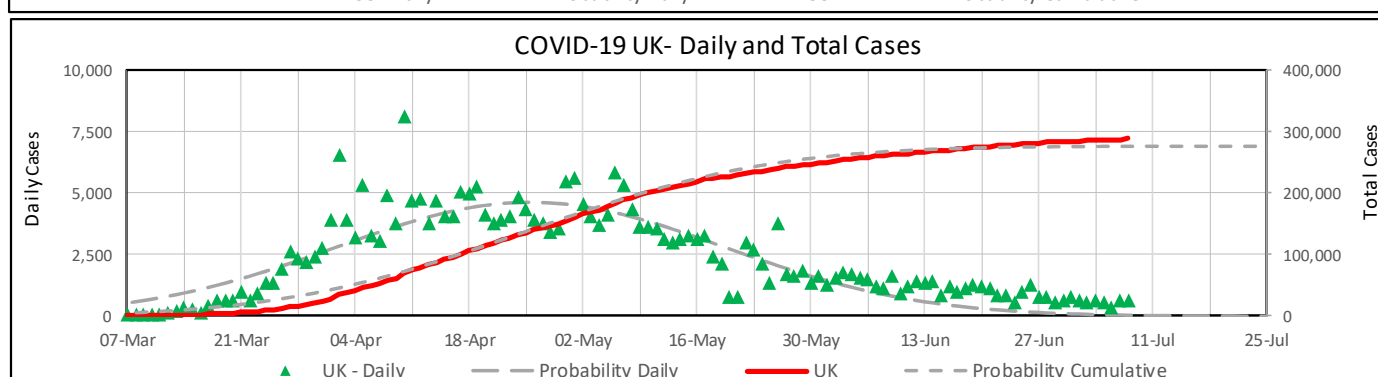
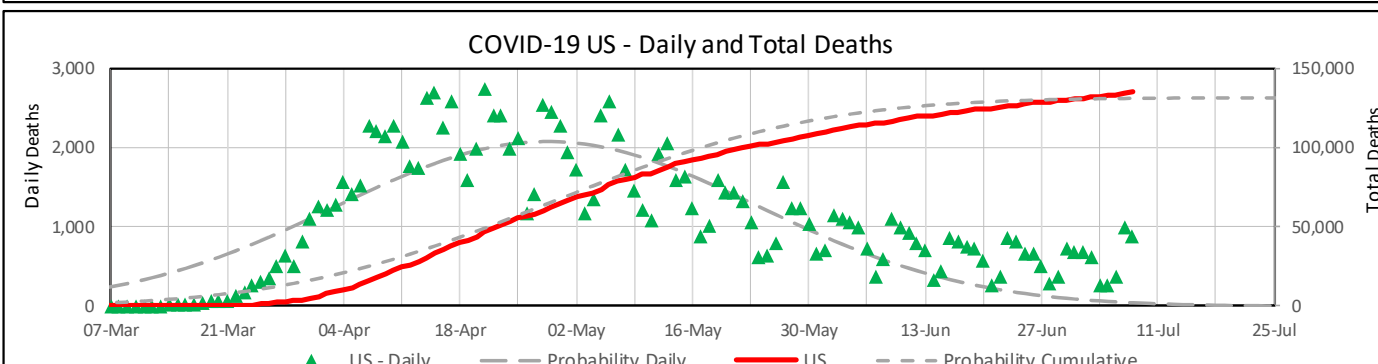
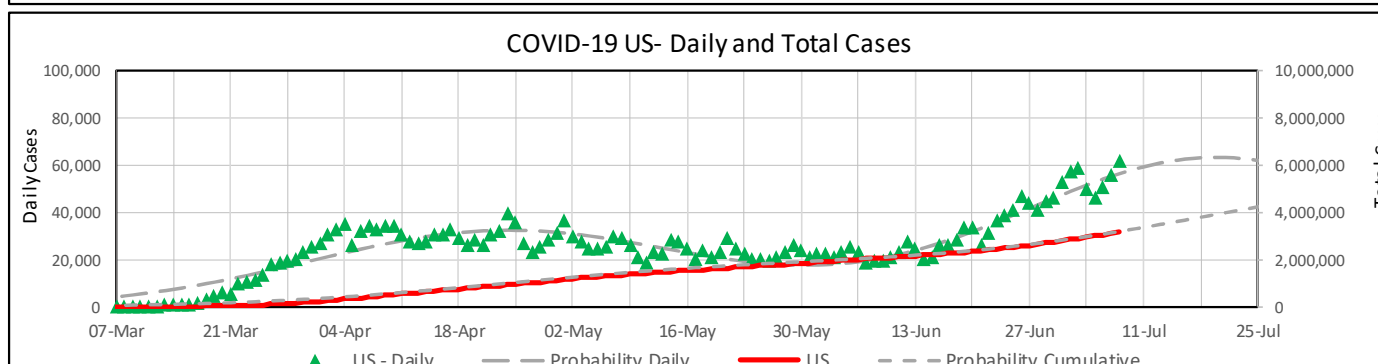
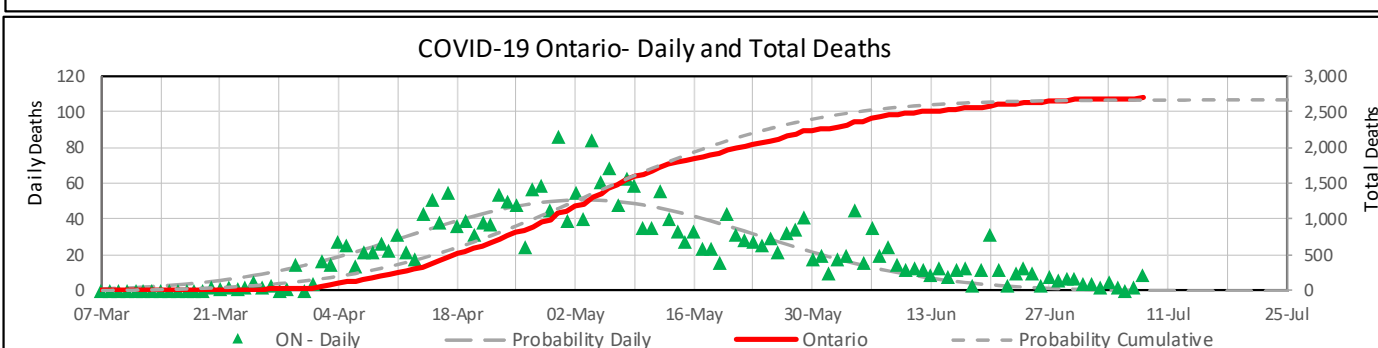
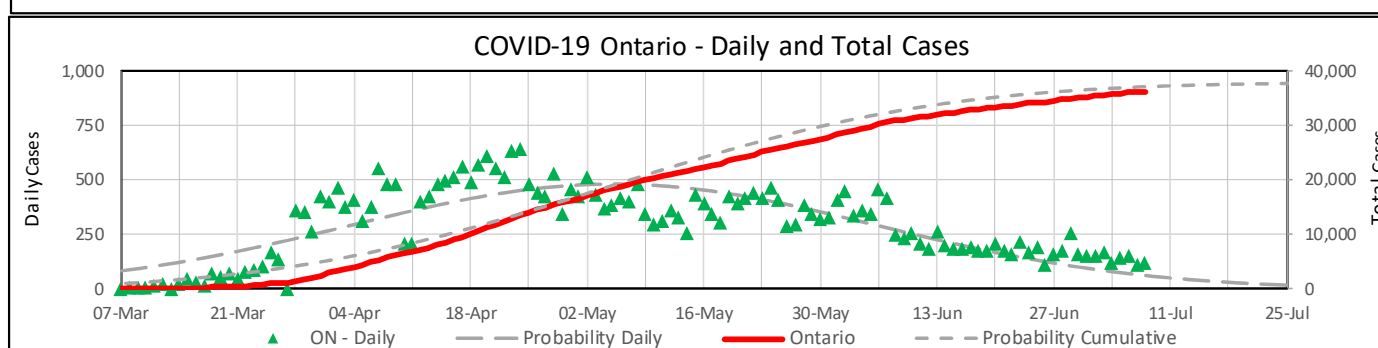
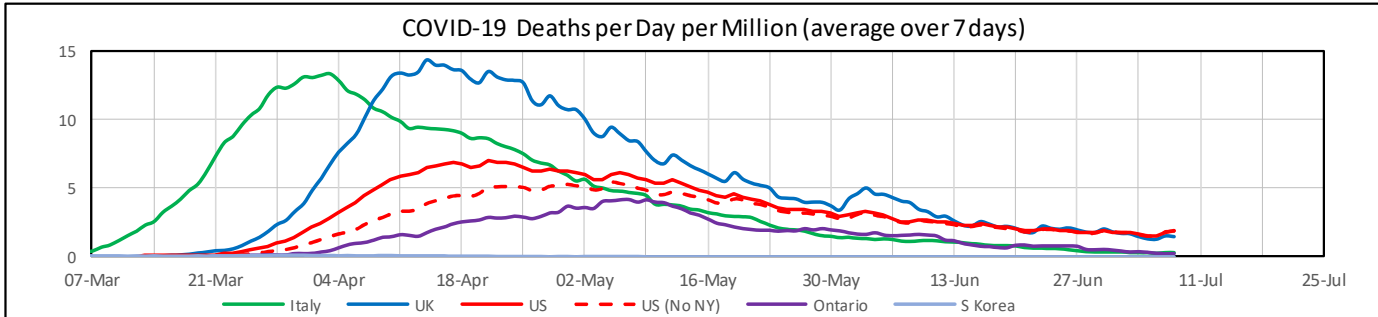
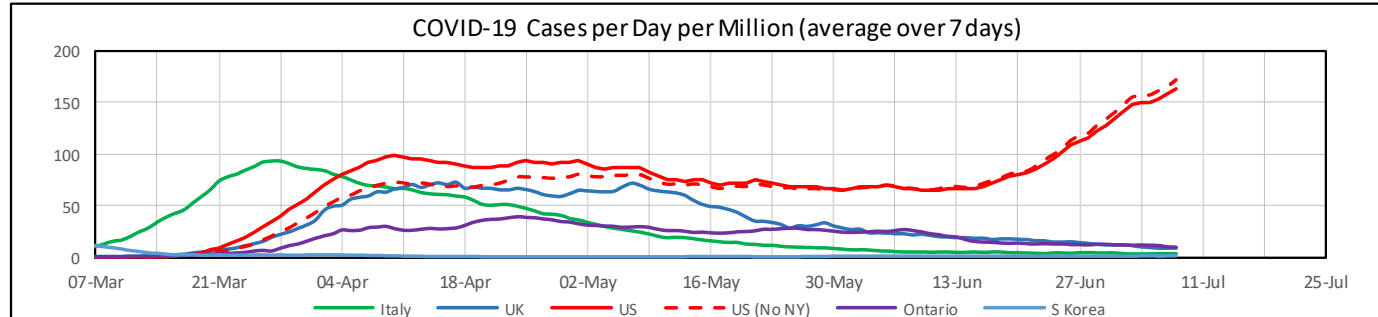
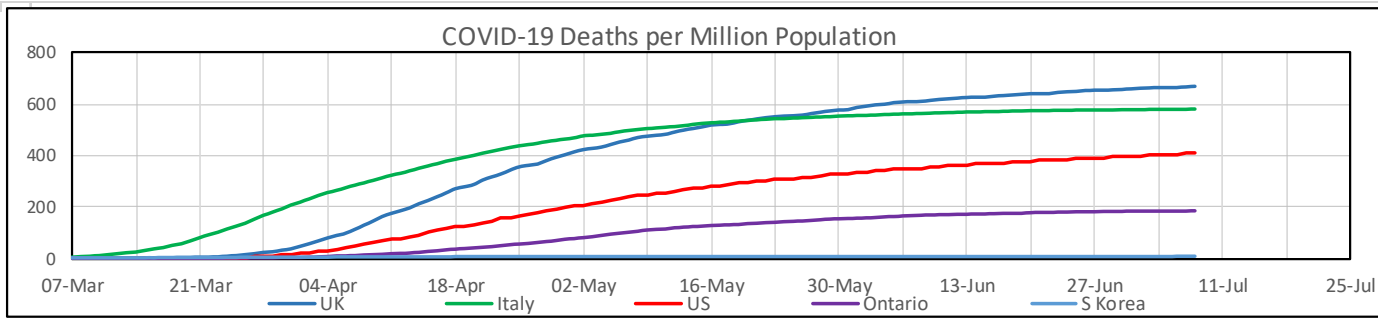
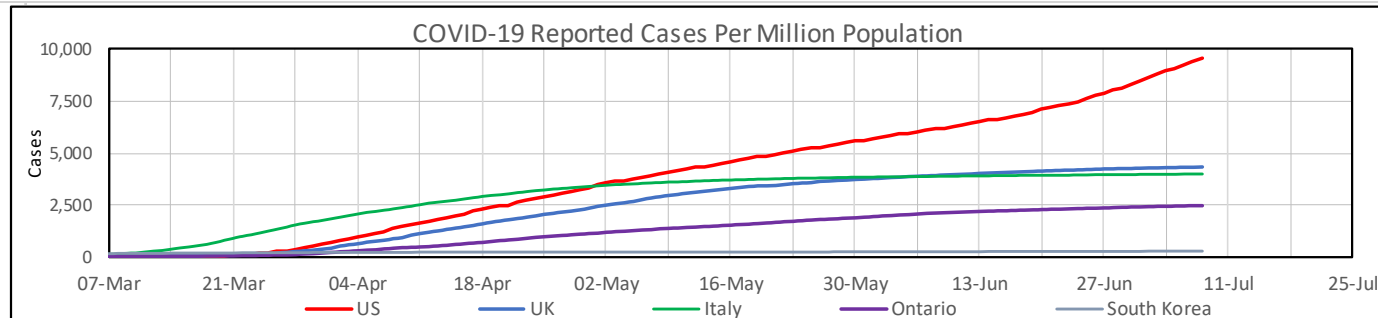


COVID-19 Observations – 09 July 2020 – by Alex Harrington



Some big changes this time. I've dropped Sweden and the Scandinavian countries. They were initially included to see how various approaches to the pandemic played out. Now we know what's happening there so we can move on.

I put the charts with the 7-day averages with the charts above – first the running totals, then the 7-day averages, and then the detailed charts. I also dropped Canada – we live in Ontario so let's keep it local.

I put the tests per case chart on the right under the data table and added a chart with 7-day average tests per day. Then I added two new charts with death data – I'll describe them later. And last week the data table didn't update properly – not sure why but it's correct now. And I changed a couple of spots where I used ratios per 100,00 to value per million to be consistent with the rest of the charts (and the rest of the world).

What to say – the news about this thing is endless. The opinions are all over the map. People are fed up, indifferent, worried, tired or grouchy.

Let's look quickly at how things progressed – Italy started off as an example of a country overwhelmed. The US quickly surpassed Italy in total cases, then the UK matched them. Their cases all rose at similar rates – the UK a little slower, not much. But once they peaked, Italy declined while the US and the UK stayed pretty steady at almost the same levels. Around mid-May the UK panicked a bit because they had been ignoring things as Sweden had. So they went through a shutdown and got the cases down. But not the US.

Meanwhile, Ontario climbed at about half the rate of the others and peaked at about half their level. Ontario had a hard time getting its case count down – the levels are only grudgingly declining. Given that we went through a three month shutdown, the case drop is not really spectacular. For comparison, Italy went from a peak of nearly 100 cases per day per million to only 3 today (down 97%). The UK went from a peak of 70 to 9 (down 87%). Ontario has gone from a peak of 40 to 10 today (down 75%). Of course the US is moving off the chart, in the wrong direction.

The death data are a little different. The cumulative chart (top right) would have you believe Italy and the UK have the most deaths. That's sort of true, but only because they had a big surge at the beginning, as seen in the daily death chart. Once those initial surges passed, the deaths per day dropped. The US deaths didn't peak as quickly and didn't reach the same height, but are dropping more slowly. Ontario deaths peaked slowly and are falling slowly. Based on the daily death rates, the US and the UK are highest at 2 deaths per million per day with Ontario and Italy at about 0.5.

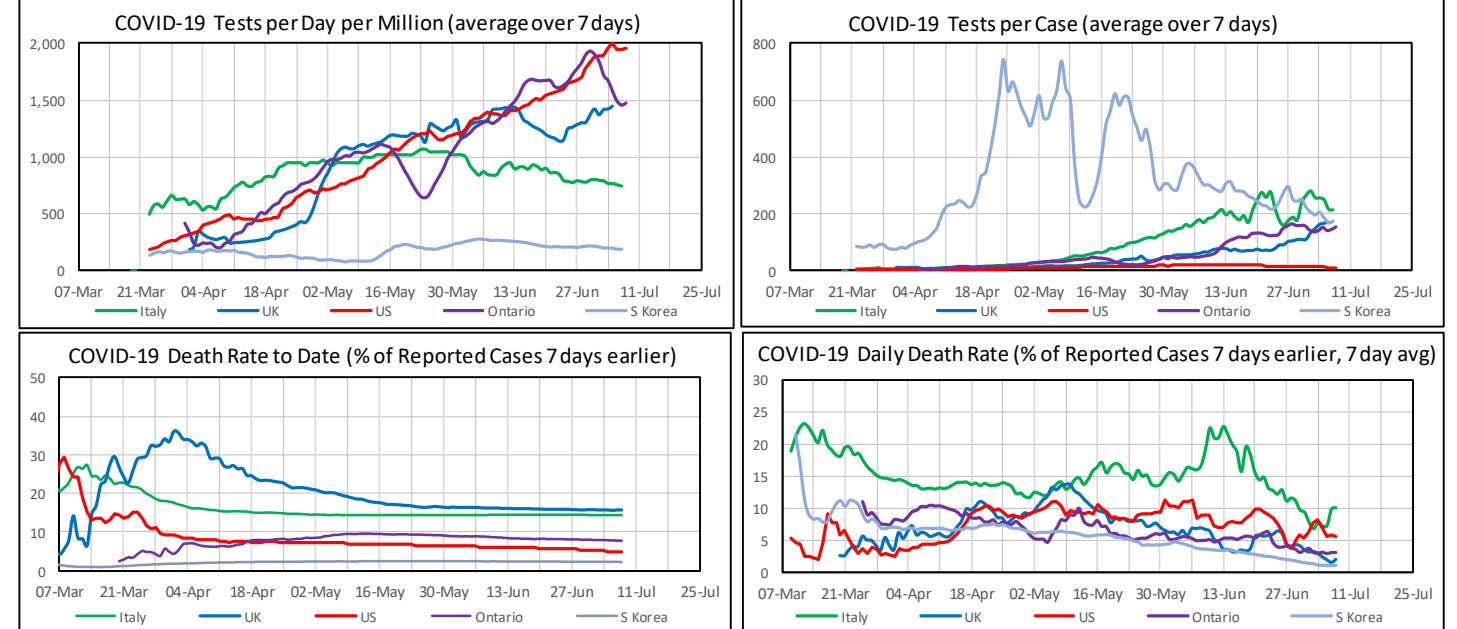
The death rates just described have nothing to do with cases – they just describe how many people died. The new charts on the right look at deaths relative to cases. First is the death rate to date - that's just the total deaths to date divided by cases to date. I actually used cases a week earlier to try to match deaths to when the case was reported. It's approximate for sure. The chart shows that the UK and Italy have the highest death rate at about 15%, then Ontario at about 8%, the US at 5% and South Korea at 2%. This (or some variation) is what is often used as the mortality rate - usually without the lag I used. The US especially likes this chart because it shows they have one of the lower rates.

But that's not the total story – we want to know what's happening now. The daily death chart on the right uses the deaths today divided by the cases one week earlier. That picture is pretty messy. It looks like Italy had the highest death rate at about 15% until it recently started dropping. Everyone else seemed to bounce around between 5% and 10% until things started to settle. Those that got the virus under control saw the death rate fall to between 1% and 3%, while the US, with cases rising, has a death rate of about 6%.

That is a pretty simplistic description, because death rate depends on many factors – age, sex, ethnicity, health among others. But it shows that you can take the data and tell all kinds of stories. Even these simple charts have one where things look good and another where they're not so good – so take your pick.

COVID-19 Summary Data										
	Tests per Million	Tests per Day		Tests per Reported Case		Cases per Million		Deaths per Million		Deaths Per Case
	Total to Date	Average over Last 7 days		Total	Last 7 days	Total to date	Average per day Last 7 days	Total to date	Average per day Last 7 days	Total to date (%)
South Korea	25,818	9,937	194	100	176	259	1.1	6	0.007	2.2%
Italy	94,198	44,795	740	24	216	3,999	3	577	0.3	14.4%
UK	97,782	96,131	1,447	23	172	4,319	9	670	1.5	15.5%
US	113,752	642,828	1,953	12	12	9,600	164	410	1.8	4.3%
Ontario	110,411	21,569	1,480	44	157	2,483	10	185	0.2	7.5%

South Korea and Canada report people tested. The others report total tests. Total tests can be 10-50% higher than people tested



All of this analysis depends on data. And it keeps changing. The UK hasn't reported their testing data for over a week. Then yesterday it was all there, revised back to the beginning with a million new tests reported compared to the old data. And a few days before that their case data were all reworked to remove 30,000 cases that apparently were duplicates. And a bunch of changes happened in the US data as various states reclassified things and the same happened last week with Italy and others. The point is, whatever the data tell you, reality is probably much worse.

So where are we? Ontario's testing has dropped over the last week – relaxing after each fire gets put out? Some say it's the deaths that are important and they're down a lot so we're good. That's partly true but who wants to wait to see if the sick people die to be able to say we're good? We have a fairly high case density (10 cases per day per million average) – the same as the UK and ten times more than South Korea who are having an outbreak right now. We've been good at containing things but there is no reason at all to be complacent. It doesn't take much to spark a surge – a big weekend outing somewhere can start things off – just look south for an example.

So for now it's more of the same – remember to clean your mask occasionally (or get a new one).

Take care of yourselves and don't endanger others.