Rt

I've written of Rt many times. I thought I'd give you a feel for its effect.

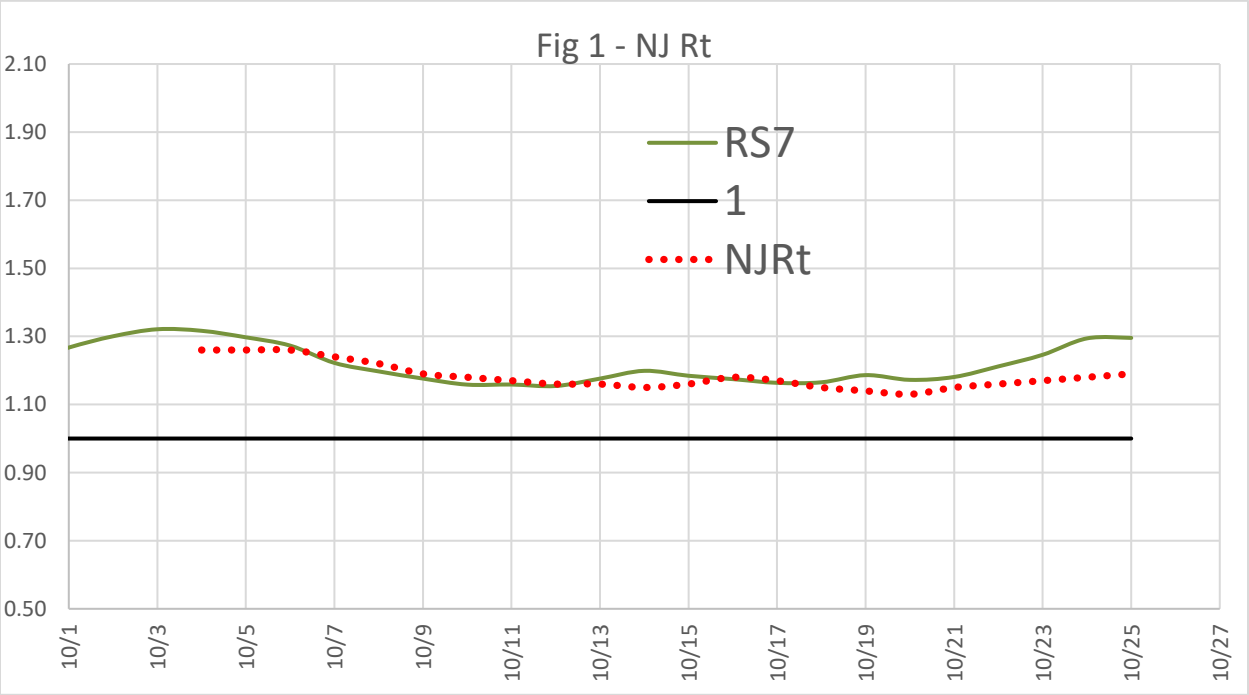
Rt's definition is that it quantifies how many people an infected person will infect. The higher the Rt the faster the spread. With and Rt less than 1.0 the number of infections shrink. With an Rt greater than one the number of infections increase.

Rt is controlled by masks, social distancing, vaccines, etc. It is hard to calculate and ever changing. There are many methods by which to calculate it. All giving varying results. The method I use is to:

1. Calculate a 7 day running average
2. Take that value and sum it for the last week.
3. Divide that value by the sum of the week before.

In other words, after smoothing, divide the most recent week's total by the prior week's total.

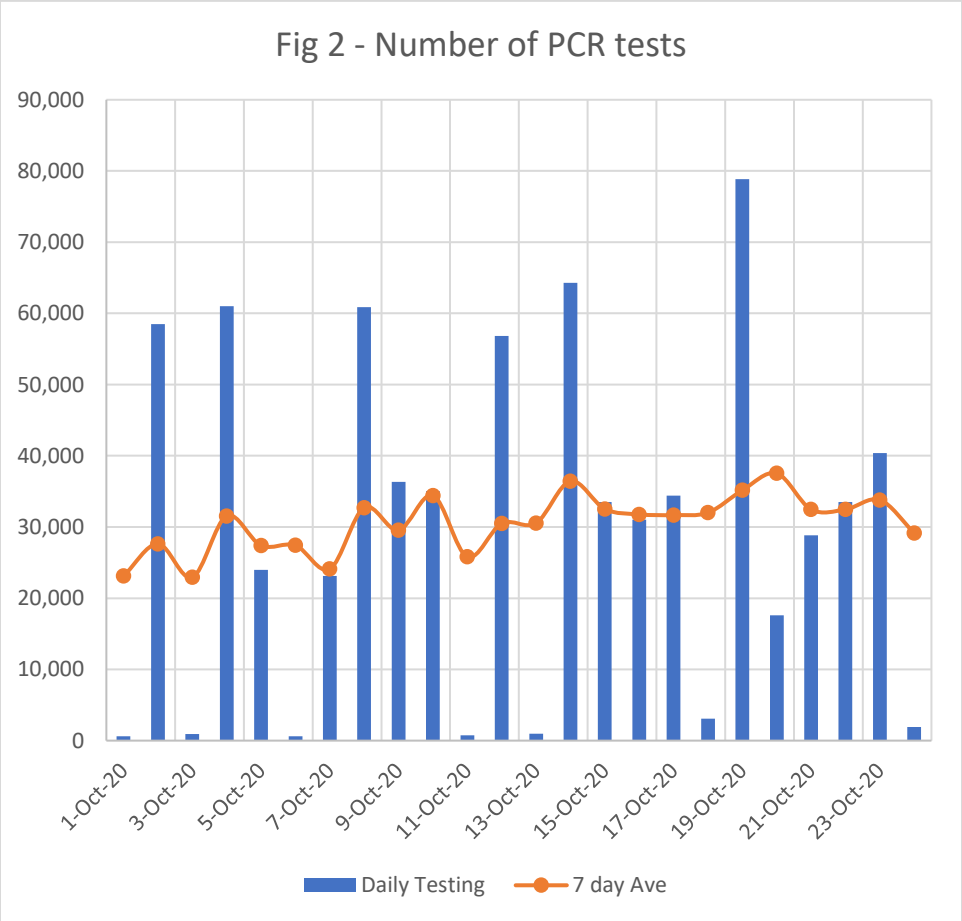
The state does it differently. I've not gotten a clear answer on how. Below is a plot (Fig 1) of my method (RS7 - green line) and the state's (NJRt red dots). I just started recording the state's on Oct 4th.



The state calculates the current Rt as 1.19. The increase in cases causing the increase in Rt, is somewhat due to the increase in testing which is up 21% since the beginning of october (Fig 2). But NJ Cases are up 88% (new NJ cases Oct 1-7 vs Oct 18-24) so I can't be due to increased testing alone.

https://covidtracking.com/data/state/new-jersey

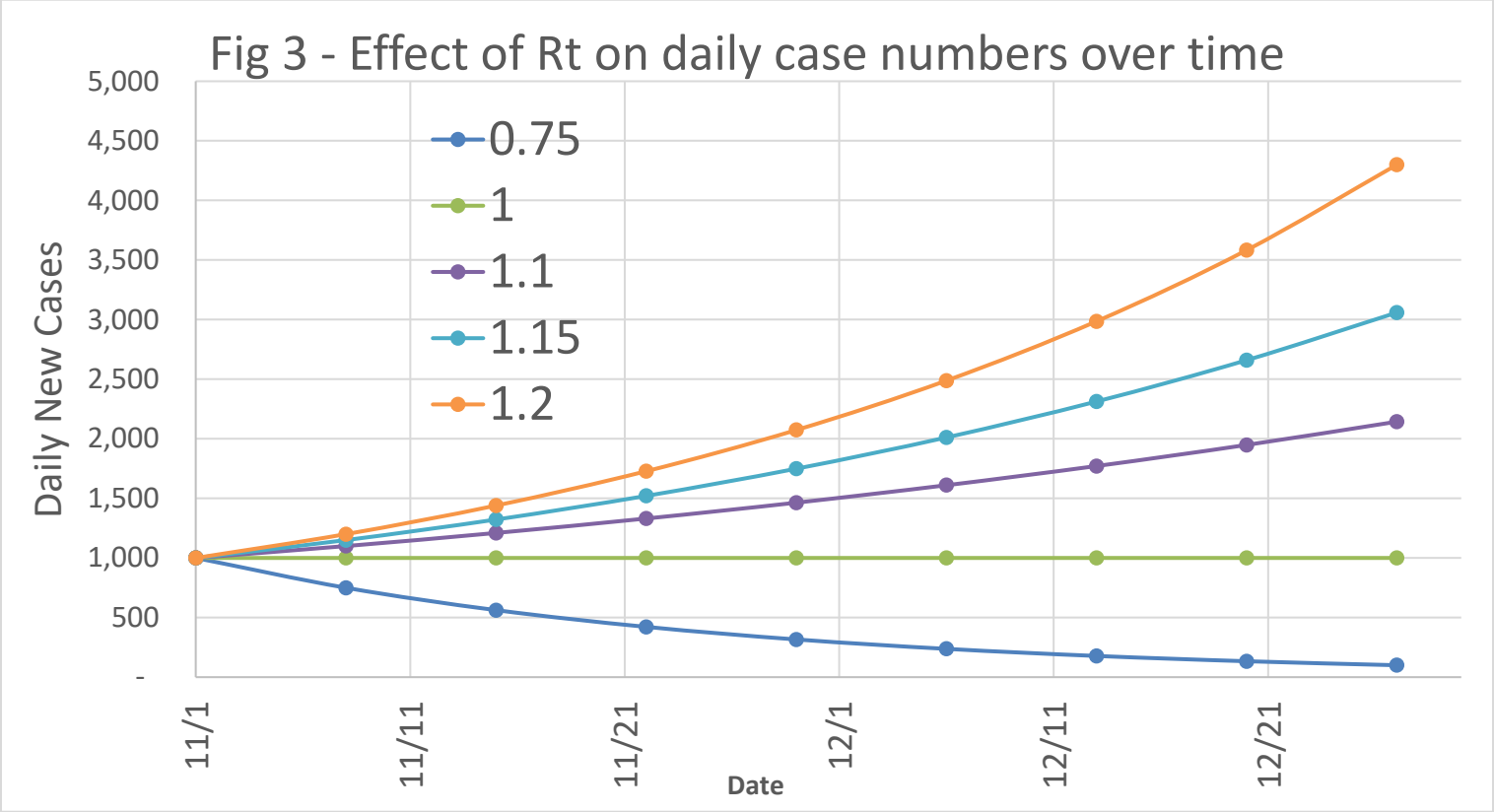
The state's Rt should take test volume into account. https://Rt.live/ adjusts for test volume and has NJ with the highest Rt in the country. I don't adjust for test volume, that explains why my calculation is higher than the states.



So how does Rt translate to the number of future cases

The following plot (Fig 3) shows how the numbers of infections change over time for different Rts. This assumes the Rt is constant for weeks at a time which it will never be. Lets say on November 1st the state was averaging 1000 cases per day (which it has been for the last 6 days). Then

the plot shows how the daily new cases change over time. For an Rt of 0.75 the cases dwindle off very quickly.



For an Rt of 1.10, by the end of the year we are looking at 2000 cases a day. You can see if the Rt is 1.2 what happens. We are at 1.19. This is why health experts are talking so gravely about the coming wave.

Another way to look at it is an Rt of 1.2 is the same as a 20% interest rate applied every 7 days. Not compounded on an annual basis, 20% every 7 days. It's 20% added, to the daily count, every 7 days.

Mind you this is NOT a prediction. This is math based on current estimates, nothing more. THIS DOES NOT HAVE TO HAPPEN. Wearing masks and social distancing whenever you are out of your "pod" will go a long way to reduce this number. We can control this if we take it seriously.