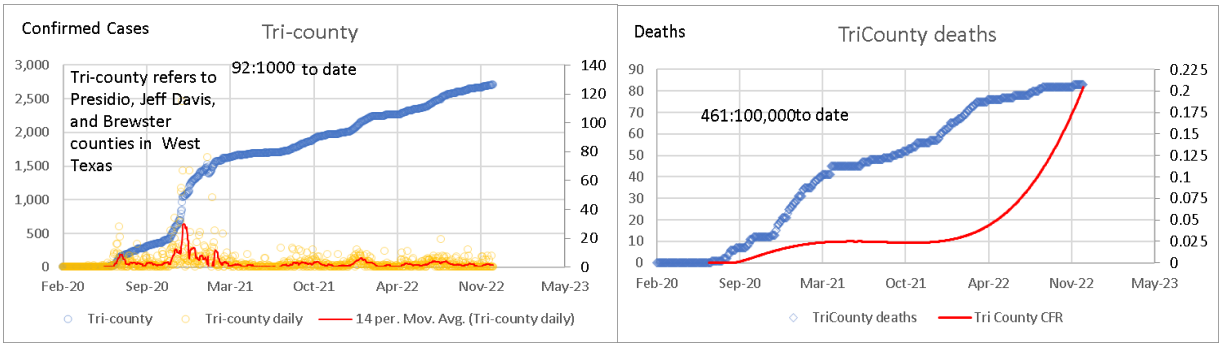
Tri-County (Brewster, Jeff Davis, and Presidio Counties) and the rest of the World, CV19

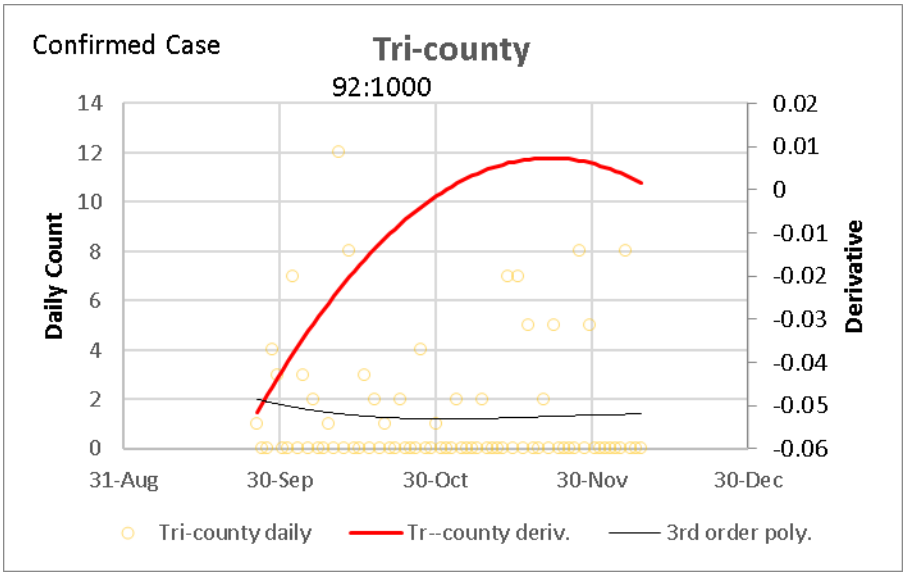
Please refer to accompanying two pdf files of graphs. The estimated number, and the related incidence relative to population, is based on maximums estimated from 7 (or 14) day averages.

Trends for Tri-County population of 18,000:



Tri-county has a fairly low number of confirmed cases, compared to Texas, but a high death rate. This seems to be the rule in areas with high Hispanic[1] populations, for some reason. See El Paso.

Another thing to consider is the *change* in the daily rate (the derivative). The claim being made is the confirmed case statistic is losing more validity, because of the increased use of home testing, so it's better to look at the change in the daily rate. Not sure I agree with this, since the majority of people who test positive at home will probably go see a doctor, and thereby get reported as a case, unless they just don't feel sick enough to go to the doctor. The derivative is useful, though. Here is what the derivative looks like for Tri-County for the last 45 days:

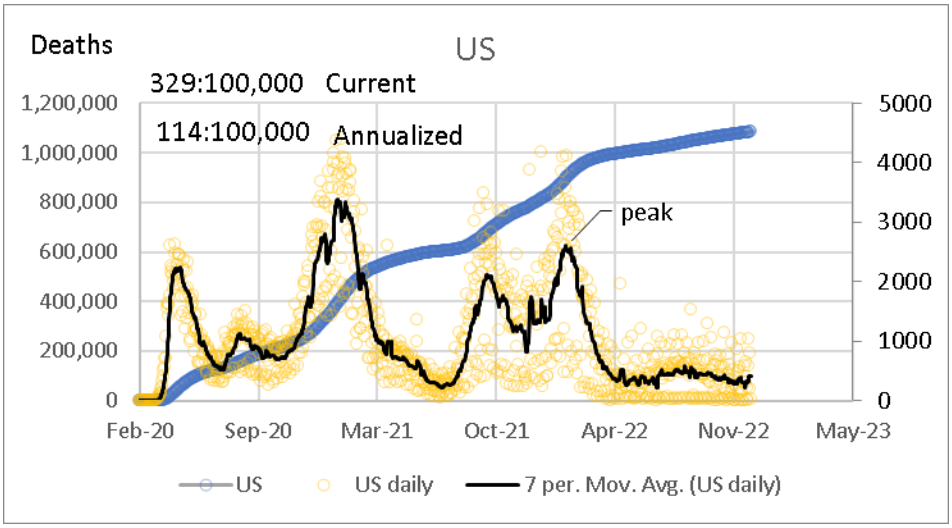


The red line is the *derivative* and is an indicator of the *change* in daily cases. Think of it as either additional or fewer cases each day, relative to the previous day.

[1] The US seems obsessed with demographic categories for some reason, probably another nasty legacy of slavery. "Hispanics" are actually Native Americans, the descendants of Mayans, Nahuatl's, Aztecs, etc. with a minor infusion of European.

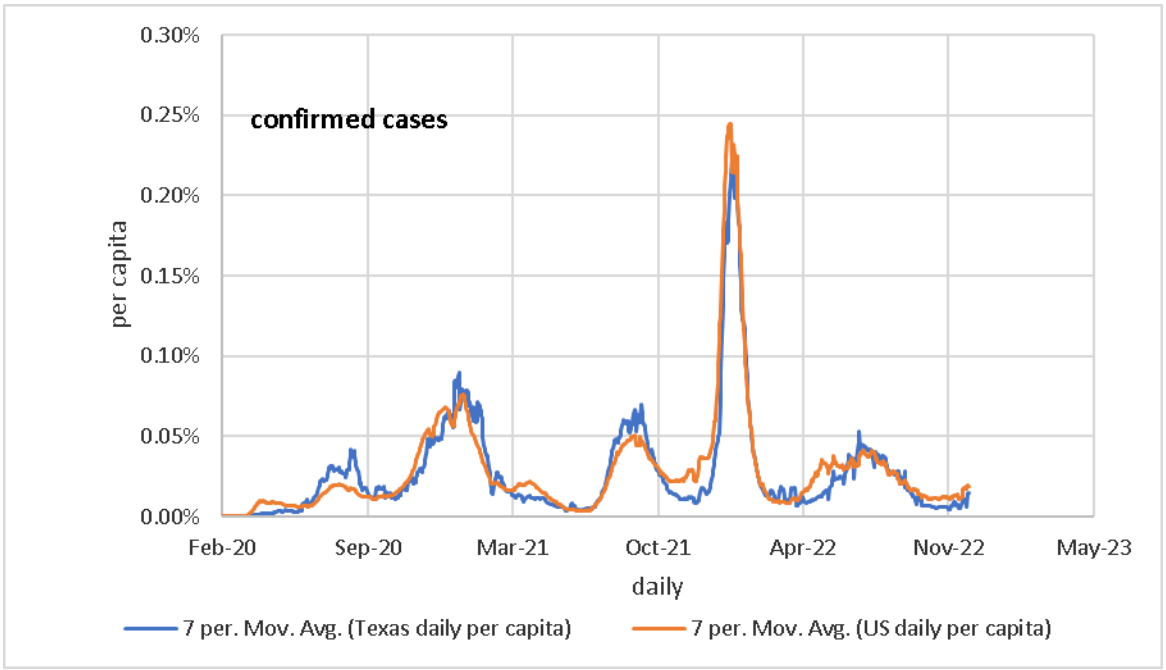
Basis of Comparison

The cumulative number for each jurisdiction, divided by its population:



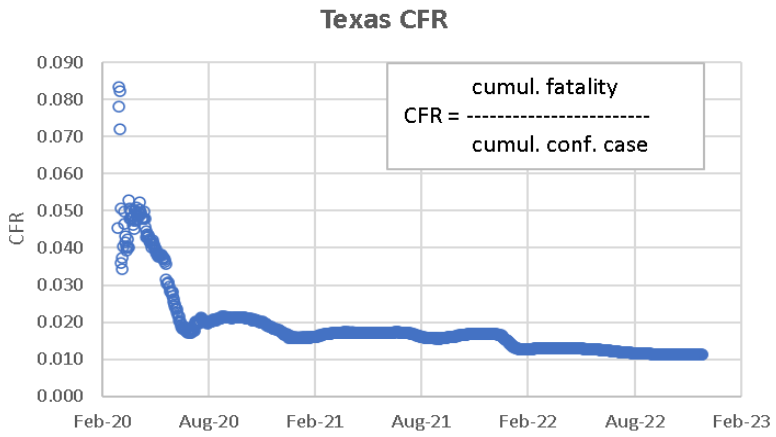
Comments

US and Texas Confirmed Cases:



The first Omicron wave has dissipated, but more variants have come from it. Seems like eventually everyone will have had this, if you consider almost a third of the population is already a confirmed case. Nonetheless, both the US and Texas show a possible uptick occurring now.

Mortality seems to have stabilized, but downward. This is an example of the confirmed case fatality ratio (CFR):

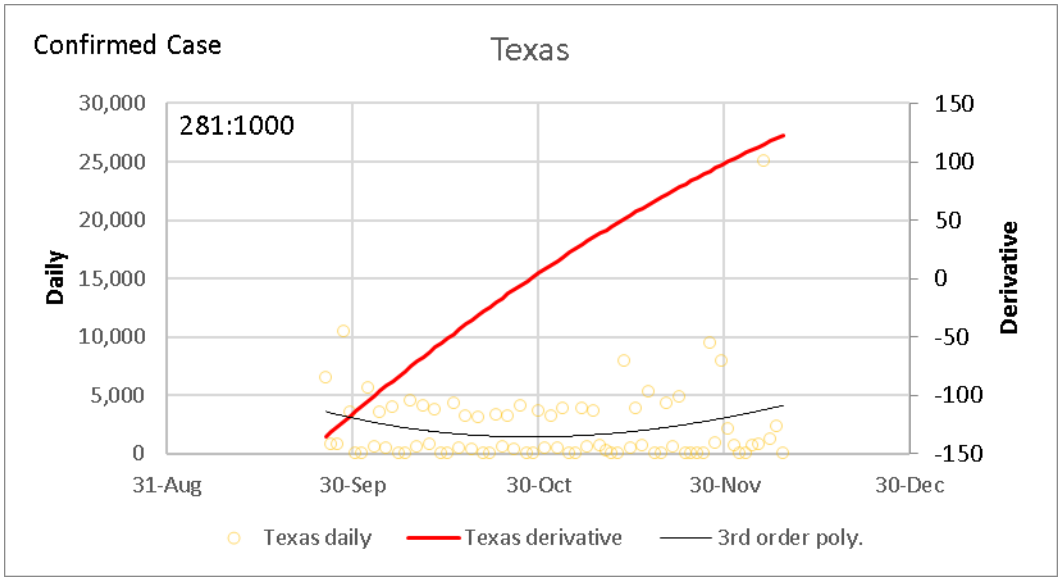


What's to be done? Your mom taught you to cover your mouth when you coughed as a act of consideration for others so you wouldn't spread germs. That is all wearing a typical cloth mask does, except more effectively than your hand (or elbow), since this virus is stronger than the usual germs.

Another good thing to do is avoid enclosed areas with low or no ventilation where there are lots of people. This would include most restaurants and bars, and probably schools, too. Or step up the air changes in such places. You can do this in your home, too, by leaving bathroom or other ventilation fans on, which will create a complete air change in an hour or a few hours, depending on the size of the house and fans.

A serious claim by the CDC is that 42% of the US adult population is obese, a very big comorbity with this virus. Sounds like some low hanging fruit to me; stop pushing sugary foods and drinks on the young![2]

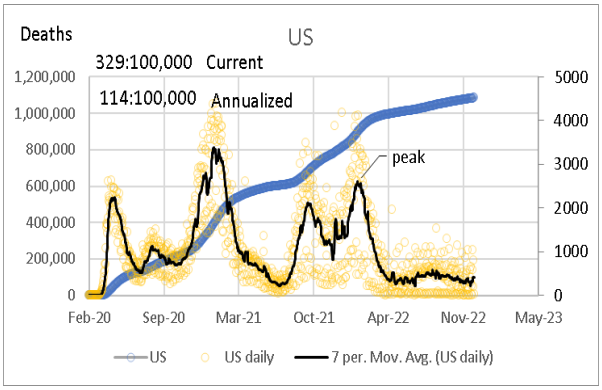
Here is what recent data looks like for Texas, looks like possible start of an uptick:



[2] https://www.cdc.gov/obesity/data/adult.html

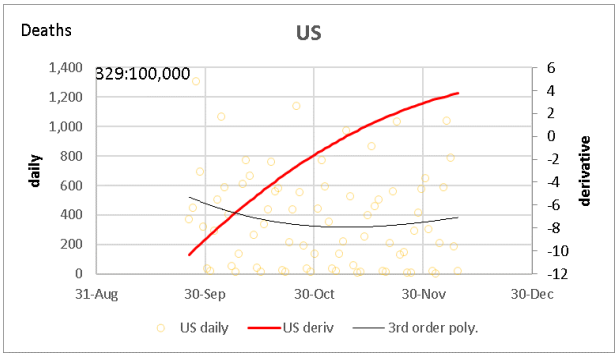
COVID-19 deaths

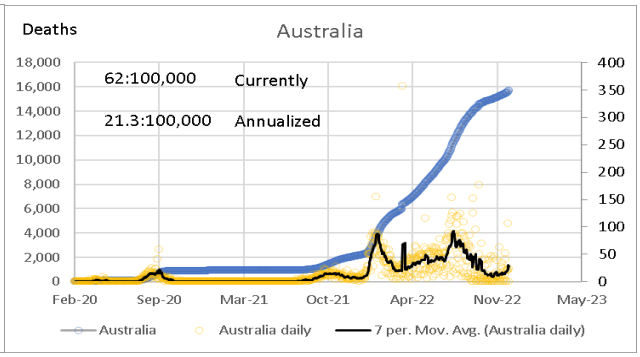
Make no mistake, Omicron (or Delta residuals) are still killing a lot of people in the US (and the rest of the world; look at Australia's recent trends).



A point of comparison:

Around 1920, the population of the US was 105 million. It is estimated that 500,000 people in the US died from the Spanish Flu epidemic in those years. This is a death rate of around 480 per 100k. Most deaths occurred during the Fall of 1918.



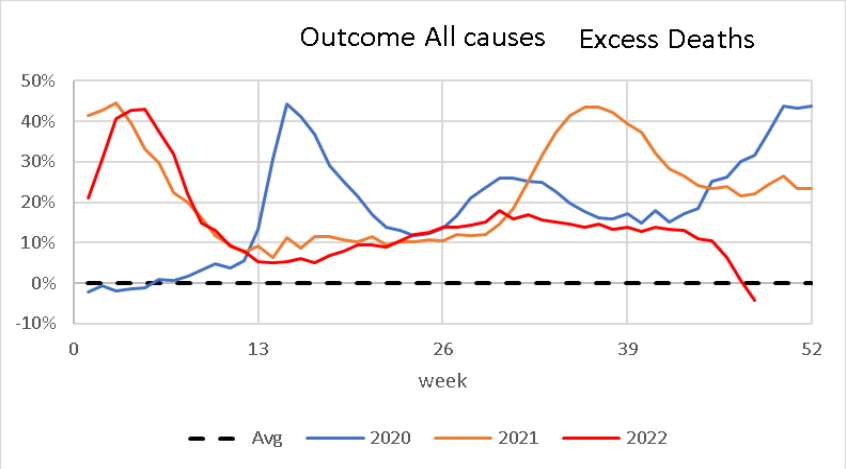


See https://github.com/Dav909/Tri-County2/blob/master/Experimental%20page.pdf for some more relative comparisons of COVID mortality risk versus other common kinds. In addition to that, an interesting meta-analysis finds the lockdowns had no significant effect on mortality.[3] Also, here are some critical remarks on that same pre-print.[4]

[3] https://sites.krieger.jhu.edu/iae/files/2022/01/A-Literature-Review-and-Meta-Analysis-of-the-Effects-of-Lockdowns-on-COVID-19-Mortality.pdf

[4] https://www.sciencemediacentre.org/expert-reaction-to-a-preprint-looking-at-the-impact-of-lockdowns-as-posted-on-the-john-hopkins-krieger-school-of-arts-and-sciences-website/

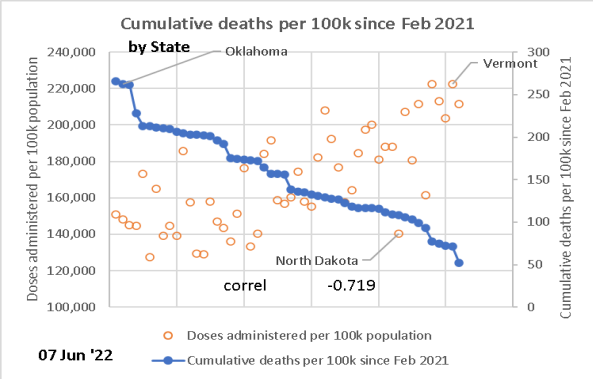
Excess Deaths for USA

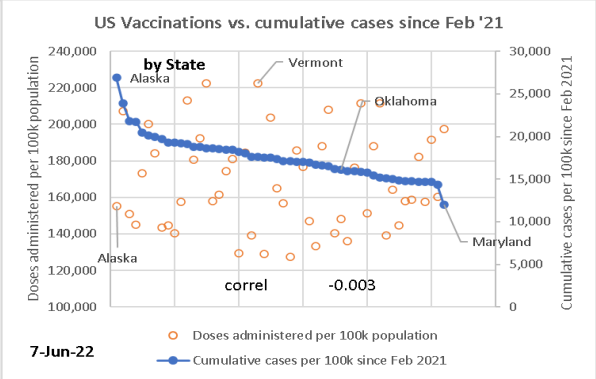


Average based on CDC's data from 2017 through 2019.[5] For some reason, CDC quit updating these numbers mid-May, but began updating the data again in July. Interestingly, CDC shows 38% of excess deaths this year are NOT attributed to COVID.

Vaccinations

Taking the CDC data and subtracting out the cumulative deaths (by State) before Feb 2021 (before vaccines available) shows a pretty strong negative correlation (the more vaccines, the less deaths) between death prevention and vaccines, not much at all for confirmed cases:





Notice this data ends in June 2022.

[5] https://data.cdc.gov/NCHS/Excess-Deaths-Associated-with-COVID-19/xkkf-xrst/data

R_o

Basic Reproduction Rate (said as R-sub-0, or just R-O). R_o is a measure of transmissibility: $R_o < 1$, disease disappears; $R_o = 1$, it's endemic; $R_o > 1$, epidemic. R_o is not even a rate, but usually defined as a ratio of two different rates. It is often referred to as "infection rate", to be confused with infectious rate and infected rate; I don't think that is a good usage. It is found in the cumulative data at the very beginning of an epidemic, when the curve is exponential, and when there is no immunity, and when all are considered susceptible. The mathematics start out pretty simple, but once you try to factor in varying immunity over time, variants through mutation, and other issues, it leads to mathematical modeling that probably doesn't tell us very much. Some of the more vulnerable will probably wear masks the rest of their life. More discussion in the "*Details on R_o you may or may not be interested in*" file found elsewhere on this site. Of current interest is the seemingly exponential growth in Taiwan, South Korea, New Zealand and China.

Masks

There's a lot of hullaballoo about masks, but it's useful to remember that the "95" rated masks, like the N95 or KN95, are rated for the most difficult particle size to trap. Above this size, it's relatively easy to make a material that will act like a seive and trap particles and still be breathable. Below this size, it's interesting that the effectiveness of the mask relies on the random kinetic motion of molecules to shove the particles *into* the material. That's how small viruses are! The viruses are on the order of 100 nanometers; the critical size most difficult to trap because it falls between the two filtration modes is about 300 nanometers. So the viruses are best trapped by kinetic motion of molecules. The N95 is rated to trap 95% of particles of 300 nanometer size, which is where the "95" designation comes from. Since this size is the hardest to trap, this implies efficacy is better than 95% for particles bigger or smaller than this critical size.[6]

However, how much virus travels in an aerosol (that is, suspended in the air by itself)? It turns out a large portion of them ride on relatively large water droplets that people cough, sneeze, or otherwise expel. The fraction traveling the one way or the other way is not well understood. An N95 is "tight" enough that it offers resistance to air flow, so if it is not fitted properly, the air you breathe will bypass the filter and it will do no good. It also will get saturated sooner or later with various particles, which increases flow resistance and increases the tendency for bypass, too. So, it must be fitted properly and changed regularly. It's interesting health authorities are now promoting N95 masks, which leads one to believe they believe aerosols are predominating over water droplet, as the main form of transmission.

The cloth and surgical masks everyone wears don't offer much protection to the wearer, especially if it turns out aerosol is the predominant mode of transmission. It's easy to demonstrate in front of a mirror with and without a cloth mask that the cloth mask *does* significantly inhibit the trajectory of a sneeze or cough, and whatever is in it, especially the bigger water droplet particles. The value of this is that increases the probability a virus will land on the floor rather than on someone else, for those viruses carried in water droplets. There is some information that humidity kept close to the face with such masks has some benefit, too. However, if aerosol predominants, it's much like throwing sand through a cyclone fence and expecting the cyclone fence to stop it. As COVID19 seems to be morphing into something else, lower virulence and higher transmissibility indicates we need a different approach than what's been taken for the earlier versions.

[6] Millimeter is a thousandth of a meter (mm), micrometer (or micron, or μm) is a millionth of a meter, and a nanometer is a billionth of a meter (nm). So, a nanometer is one thousandth of a micron. A human hair is measured in the micron range, for example, say from 20 μm to 200 μm; 300 nm is 0.3 μm.