

STANDARD DEVIATIONS: Numbers Game

Greetings,

SALT LAKE CITY — Utah dipped below 500 average daily new COVID-19 cases on Friday — the day before the Aug. 1 deadline for which Gov. Gary Herbert warned could bring greater government restrictions if that goal wasn't met.

The Beehive State confirmed exactly 500 more cases of the novel coronavirus and four additional deaths on Friday, the Utah Department of Health reported. The rolling seven-day average of new cases is now 457, and the positive test rate is 9.9%.

~Deseret News, August 1, 2020

Good News? Well, really, it's just numbers. And numbers is what we do, right? So we're pretty good at seeing them for what they are and asking the questions that decipher the meaning behind the numbers.

Here are the questions I ask when I see this report:

- How many total tests were performed?
- What percentage of the tests were positive?
- Where does this number fit in the trend of the pandemic for Utah?
- What does this number mean?

You see, one number in time doesn't mean much; **and we know this**. Here are a couple of examples:

Let's say your patient, X, has an ALT value of 53. Hmm, not bad, just a bit high, right? But here are the last six results over the last 2 days of (q8) orders: 15, 16, 15, 16, 25, 38. AND, this patient is beginning a regimen of Valproic Acid for seizures.

Or,

Let's say your patient, X, has an ALT value of 53. Hmm, not bad, just a bit high, right? But here are the last six results over the last 2 days of (q8) orders: 65,432, 54,321, 4,321, 321, 96, 65. AND, this patient is a liver transplant recipient.



Same number, different result; the same number means something completely different in each scenario (one good, one bad). There's the rub. Numbers need context and we need to be able to understand what any single number means, or else it's just a number.

Now, let's go back to the 457 rolling 7-day average cases of COVID-19 reported Saturday and dig a little deeper. On the surface, our Beehive State average of new cases per day is 447 for the last 2 weeks. WOW! That's about 30% lower than the average July 15. Great news (it would seem).

How many total tests were performed? What % are positives? What is the trend? What does it mean? I'm rolling back the rolling average four weeks and looking at all of July.

From July 1, 2020 to July 16, Utah performed 98,252 tests and reported 9,779 positives, or 9.95%.

From July 17, 2020 to August 1, Utah performed 78,170 tests and reported 7,518 positives, or 9.62%.

The trend of positivity is relatively stable at ~10%; NO MATTER HOW MANY TESTS ARE PERFORMED.

The suggested capacity for Utah coronavirus testing is 7,000 tests/day. The difference of tests performed lately indicates a huge reduction in testing in the last two weeks. We are testing far below our capacity and capability. A closer look indicates that in the last week Utah performed an average of 4156 tests but the week before we did 5961 tests, or 30% fewer tests. FYI, our testing capacity did not decrease, nope, just the volume. The rate of positives does not change (statistically), and that's the number we need to be looking at, not the number of positives in a day because that depends on the number tested.

If we tested 7,000 people every day (and that's the suggested Utah test capacity) then we'd expect (no, we'd actually see...) 700 positive cases each day. If we reported **that** number then Governor Herbert would be mandated to impose greater restrictions and delay opening Utah's economy, because the threshold was a 500 case daily average. Well, shucks, that ain't gonna happen when we can massage the data!

Which, of course, is exactly what has happened. By performing much fewer tests than we could, we naturally report fewer positives and **the number of tests is down 38% over the last week. That drove the rolling average of reported positives into a range that suited the Governor's economic agenda but does not change the rate!**

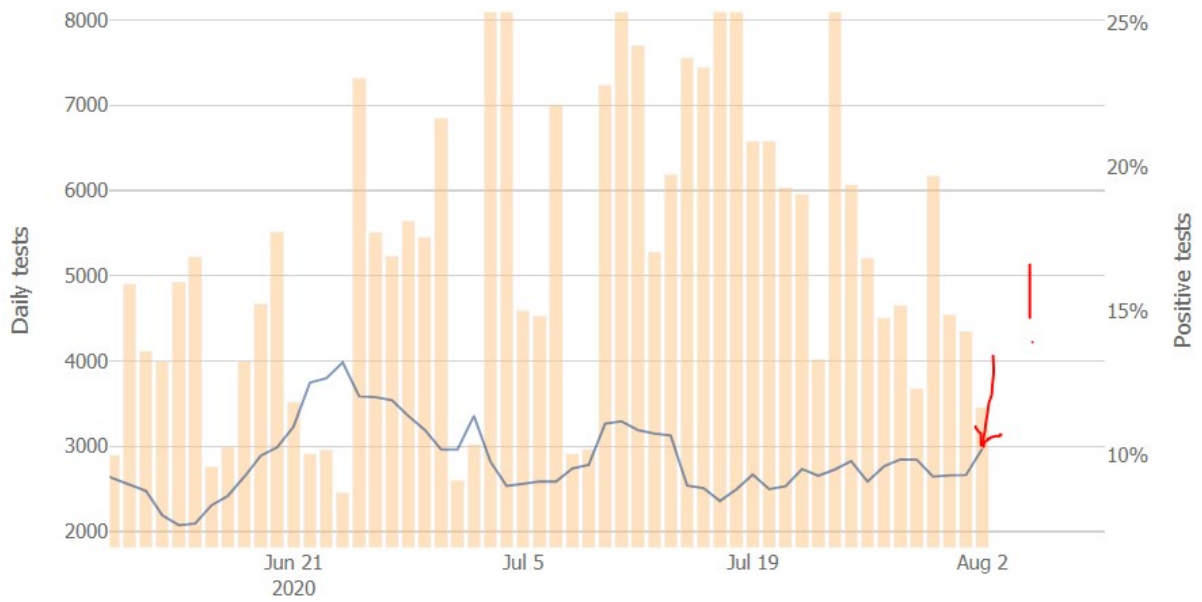
The decision to re-open or not, to impose restrictions or not, **to provide a safer environment or not**, should be based on a scientific and accurate understanding of the data, or not. The average daily new case number is meaningless by itself.

Have a great week and be safe,

Bryan



Utah ▼



{<https://coronavirus.jhu.edu/testing/individual-states/utah>. This is the important data.}

