

Analysis of Hospitalization, Positive Covid-19 Viral Tests and Recovered Individuals in Texas

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The scope of this analysis concentrates on Texas and specific trauma service areas within Texas.

1 Daily Hospitalizations in Texas

The data sets include new hospitalizations statewide and new hospitalizations within specific regions of Texas that are referred to as trauma service areas. In 1992, Texas was subdivided into twenty-two trauma service areas in order to establish a trauma response system that would be unique and best fitting to each region, with the intent to minimize casualty due to trauma, natural disaster or bioterrorist attack. Further, each trauma service area is assigned an initial (A-V) and is informally referred to by its largest, or most well-known, city within its boundaries.

Figure 2 displays data for Texas overall and for the four most severely affected trauma service areas in Texas regarding new lab confirmed Covid-19 hospitalizations. The trauma service areas in Figure 2 are: TSA E, which represents the Dallas/ Fort Worth area; TSA P, which represents the San Antonio area; TSA Q, which represents the Houston area; TSA V, which represents the Lower Rio Grande Valley. Figure 3 displays data for seven trauma service areas in Texas that are currently reporting over one hundred new lab confirmed Covid-19 hospitalizations per day. The trauma service areas in Figure 3 are: TSA F, which represents the Paris area; TSA G, which represents the Longview/Tyler area; TSA I, which represents the El Paso area; TSA O, which represents the Austin area; TSA R, which represents the Galveston area; TSA T, which represents the Laredo area; TSA U, which represents the Corpus Christi area.

Daily lab confirmed Covid-19 hospitalizations in Texas have changed over time in response to each phase of reopening initiated by Governor Greg Abbott. The data shows that while Texas was operating under a stay at home order, daily hospitalizations were stable throughout Texas. Approximately two weeks after Phase II of reopening Texas, roughly June 1, 2020, daily lab confirmed Covid-19 hospitalizations begin to rise at an increasing rate for approximately six weeks. The most dramatic increase in daily lab confirmed Covid-19 hospitalizations are seen in TSA P and TSA V, corresponding to the San Antonio area and the Lower Rio Grande Valley area. At the end of June, June 26, 2020, Governor Greg Abbott reverses the reopening of Texas and specifically orders the closing of bars and reduces the occupancy of restaurants down to fifty percent. The data shows that approximately two and a half weeks after Governor Greg Abbott selectively reverses the reopening of Texas, the reportings of new lab confirmed Covid-19 hospitalizations reach a peak and then begin to steadily decline. At the end of July, each dataset shows a fluctuating decline in reportings that stabilizes, with little to no fluctuation, around August 1, 2020. This fluctuation in reportings is due to the Texas Department of State Health Services adjusting their methods of data reporting to comply with new federal requirements. The data shows that as the Texas Department of State Health Service is adjusting their data recording of new lab confirmed Covid-19 hospitalizations, there is a subtle to dramatic decline in new reportings shown by each dataset. The most probable reason for this sudden decline and stabilization of new lab confirmed Covid-19 hospitalizations is that some hospitalizations were unaccounted for, or rather, lost during the transition of data recording to comply with new federal regulations. Further, the data shows that a transition in data recording resulted in a brief period of inaccurate and incomplete data representation regarding new lab confirmed Covid-19 hospitalizations in Texas and select trauma service areas.

In conclusion,

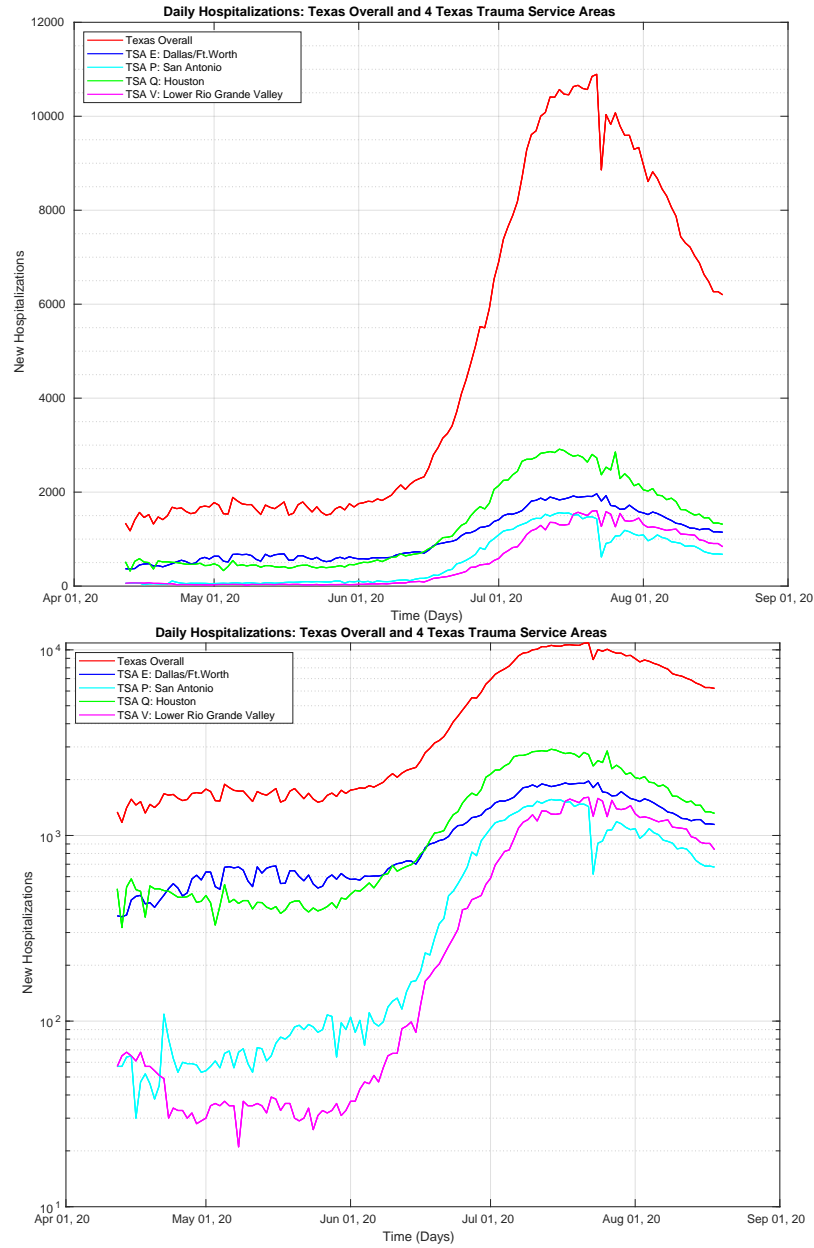


Figure 2: Daily Hospitalizations in Texas and four Trauma Service Areas within Texas that are reporting highest daily hospitalization due to Covid-19. The top figure displays the data on a linear scale and the bottom figure displays the data on a logarithmic scale.

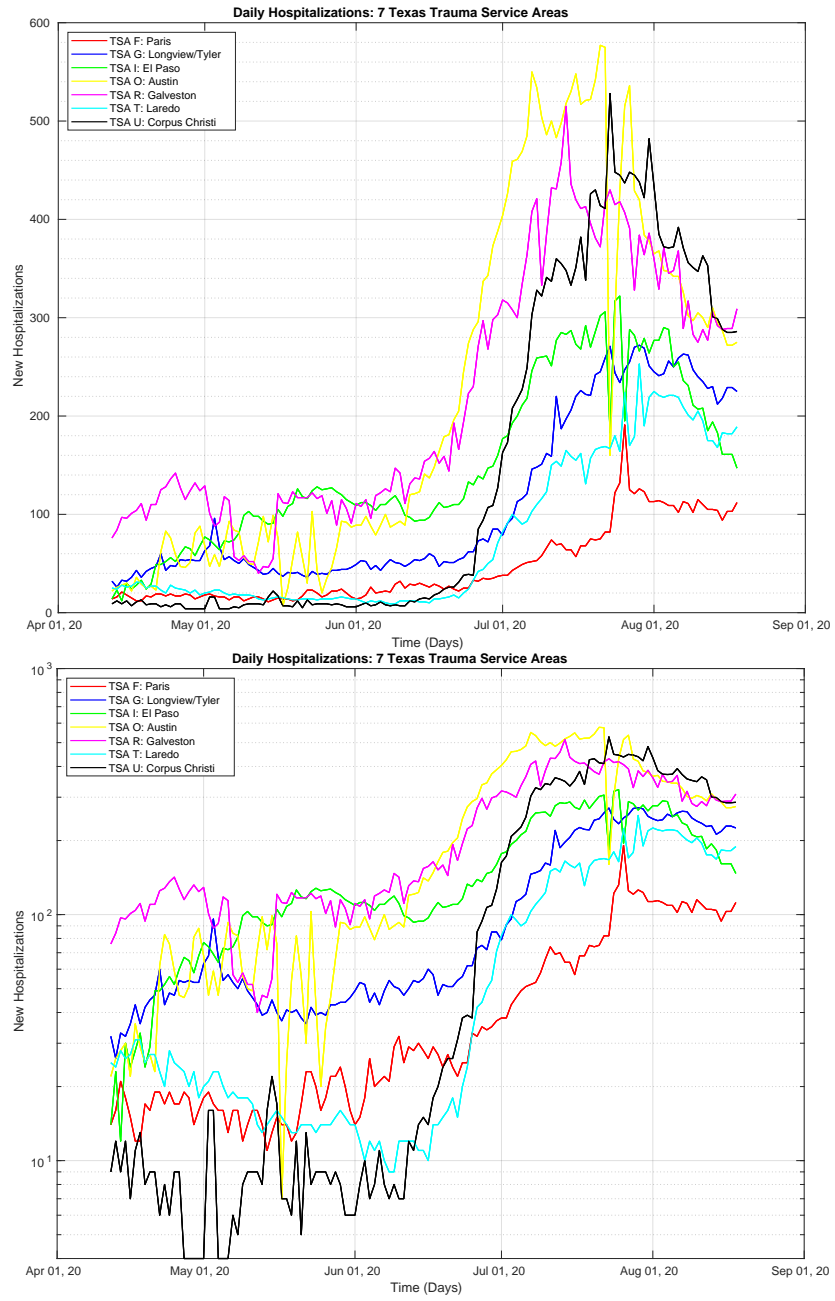


Figure 3: Daily Hospitalizations in seven Trauma Service Areas within Texas that are reporting over one hundred daily lab confirmed hospitalizations due to Covid-19. The top figure displays the data on a linear scale and the bottom figure displays the data on a logarithmic scale.

2 Viral Tests and Recovered Individuals in Texas

The data here compares new positive Covid-19 viral tests to the daily count of new individuals who previously received a positive Covid-19 viral test and are now considered to be recovered. The data in Figure 4 and Figure 5 concerns individuals in Texas only.

Figure 4 shows the two datasets, new positive Covid-19 viral tests and new recovered individuals, over time as they are being reported. The data in Figure 4 has been modified to show the trend over a seven day moving average period. The datasets in Figure 4 exhibit similar trends, since the dataset of new recovered individuals is a subset of new positive viral tests. The data in Figure 5 has been modified to show the trend over a seven day moving average period and adjusted to show a fourteen day lag. The fourteen day lag was applied by means of transplanting the dataset of new recovered individuals back in time by fourteen days in order to superimpose the two datasets for a visual comparison of similarities and differences.

Further, Figure 4 shows that the two datasets resemble one another and Figure 5 shows that when a fourteen day lag is applied to the two datasets, that the two datasets nearly overlap exactly. It can be inferred that on average, when an individual tests positive for a Covid-19 viral test in Texas, that approximately fourteen days later, the same individual will be considered to be recovered from Covid-19.

In addition, Figure 4 and Figure 5 show the dramatic increase in positive Covid-19 viral tests over time in Texas, as well as the individuals who have recovered from a positive Covid-19 viral test over time. The data shows that from April 1, 2020 to about June 5, 2020, daily positive Covid-19 viral tests increase at a mild to moderate rate, hovering just below 1,750 new positive Covid-19 viral tests per day. The data shows that from approximately June 5, 2020 to approximately July 15, 2020, the daily new positive Covid-19 viral test count increases exponentially to a local maximum of about 10,000 new positive Covid-19 viral tests per day in Texas. Further, the data shows that from approximately July 15, 2020 to approximately July 25, 2020, the daily count for new positive Covid-19 viral tests steadily decreases; however, from approximately July 25, 2020 to roughly August 17, 2020, the daily count for new positive Covid-19 viral tests rises and falls within brief windows of time. Noteworthy, the decline in new positive Covid-19 viral tests in Texas begins to decline roughly ten days after Governor Greg Abbott reverses the reopening of Texas by initiating the closing of bars and reducing restaurant occupancy down from seventy-five percent to fifty percent.

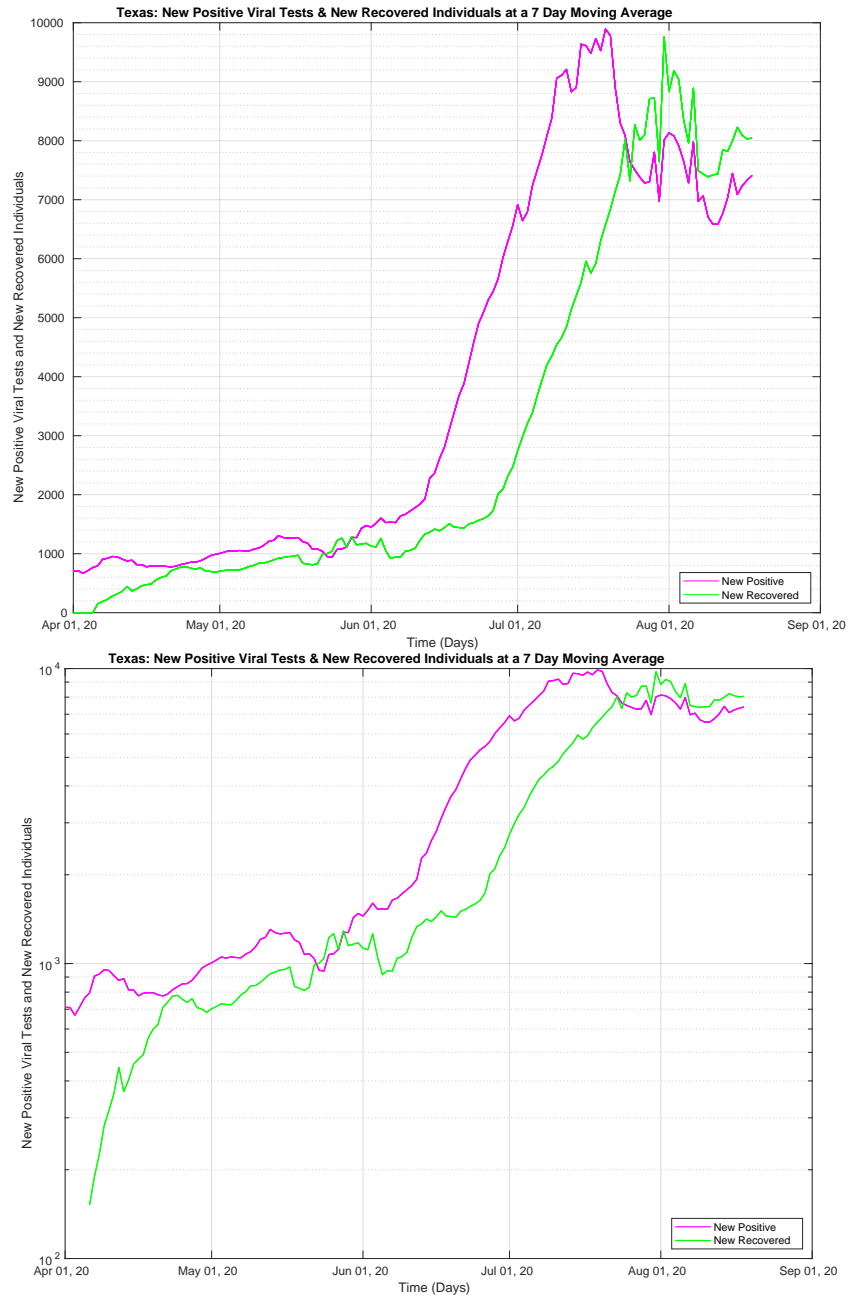


Figure 4: Daily positive viral tests for Covid-19 in Texas and daily new recovered individuals (who previously received a positive Covid-19 viral test) in Texas adjusted by a seven day moving average. The top figure displays the data on a linear scale and the bottom figure displays the data on a logarithmic scale.

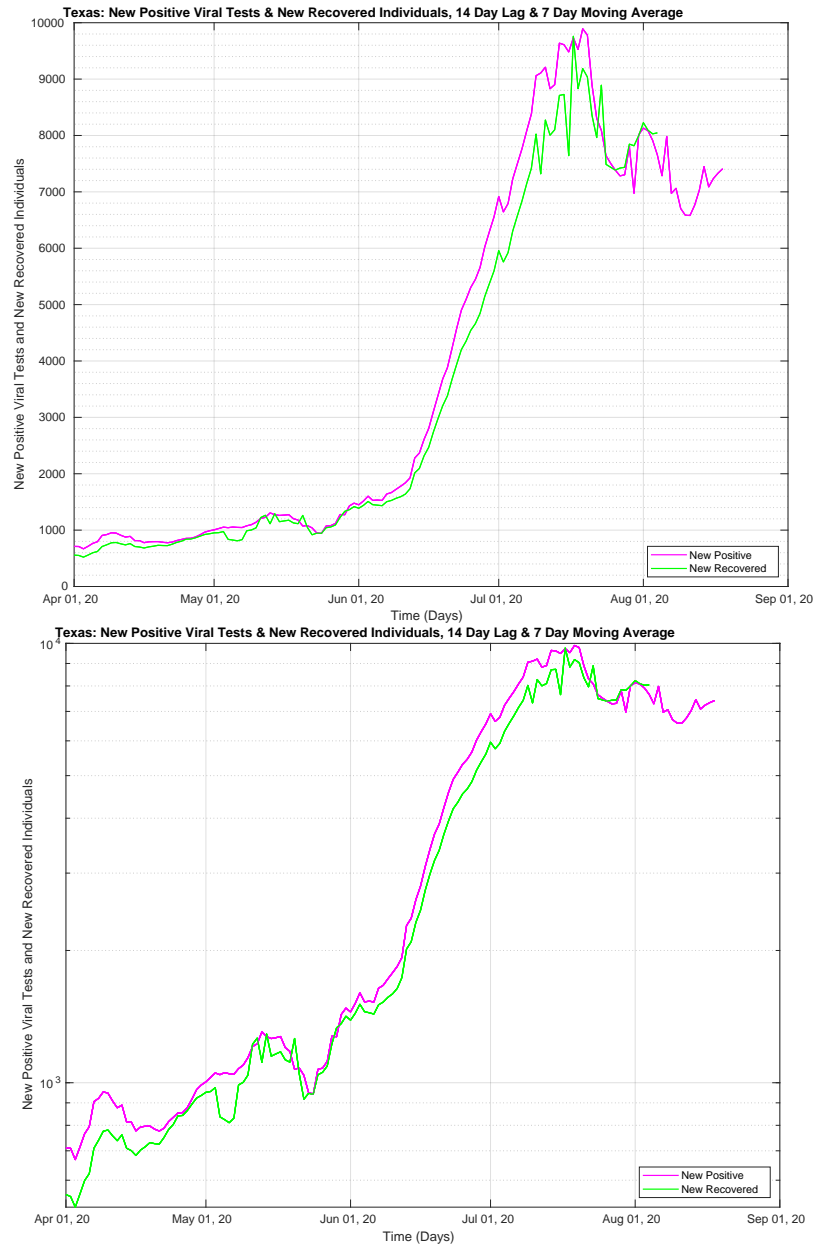


Figure 5: Daily positive viral tests for Covid-19 in Texas and daily new recovered individuals (who previously received a positive Covid-19 viral test) in Texas adjusted by a fourteen day lag and a seven day moving average. The top figure displays the data on a linear scale and the bottom figure displays the data on a logarithmic scale.