COVID-19 Current State Analysis and Forecasting for the DFW Region

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The following slides illustrate a model of how COVID-19 is spreading across the DFW region based on real patient data. This provides a snapshot based on data available as of October 25-26. Every time we receive new data, we re-run the model and refine the graphs.

In the following slides we examine how well preventive measures including vaccinations, masking, staying at home, physical distancing, hand hygiene and others have limited the spread of COVID-19, and what might happen looking forward.

Model-building is an iterative process with inherent uncertainty in its predictions. It facilitates planning and should not be the sole basis for policies or management decisions for any emerging infection.

We thank the Dallas and Tarrant County health departments, the hospitals, and health systems that have contributed data to help us build this model.
Commentary

We continue to see decreases in many measures we track, including new hospital admissions for COVID-19, test positivity rates, COVID-related ER visits, and the total number of people hospitalized for COVID-19 in the region. However, the rates at which these measures are declining are slowing. Further declines in the total number of people hospitalized in Dallas and Tarrant County are projected in the near term, and levels are now below the peak of the summer 2020 surge. However, hospitalization levels may flatten out or increase in the coming months without increases in vaccination levels or personal adherence to mitigation strategies. Unvaccinated individuals remain particularly susceptible to the highly contagious Delta variant, which currently represents 100 percent of all positive test samples at UT Southwestern.

Rates of self-reported mask wearing in public significantly increased starting in mid-July but may have recently plateaued. This simple but powerful intervention can help mitigate the spread of SARS-CoV-2 indoors as we head deeper into the cooler months.

Increased personal adherence to masking recommendations is especially important as in-person schooling continues in the region. Indoor masking should help limit the spread of other respiratory viral infections such as RSV, which incrementally strain the same local hospital resources as well. Practicing physical distancing and other interventions recommended by health experts will be necessary to protect the health of Texans who are currently unvaccinated or who may be immunocompromised. Anyone who is experiencing symptoms or exposed to someone with COVID-19 is encouraged to get tested and quarantine to break the chain of transmission.

Vaccination remains our most powerful tool for preventing severe COVID-19, and everyone is strongly encouraged to get the COVID-19 vaccine. As part of our ongoing commitment to an equitable, effective, and efficient vaccination rollout, all Texans – age 12 and up – can schedule a vaccination appointment using UT Southwestern’s online scheduling portal: utswmed.org/vaccines.

Visit the CDC website for guidance on which kinds of activities are safe once fully vaccinated, as well as which levels of prevention are recommended. It is important to remember that people arriving at the hospital today were likely infected ~2 weeks ago. Increasing compliance with prevention measures and increasing vaccination rates will help us control transmission in North Texas.
COVID-19 hospitalizations (black squares) have **decreased by 26%** over the past two weeks.

The **blue line** shows the estimated number of hospitalizations for the last three weeks, as well as our 21-day forecast starting from 10/26.

Dallas County **total COVID-19 hospitalizations** are predicted to reach 180 concurrent hospitalized cases by November 15.

Roughly 250 new COVID-19 **infections per day** are expected by November 15.
Dallas County’s Trajectory Still Depends on our Behavior/ Vaccination Success

- COVID-19 hospitalizations could increase in the coming months given our current pace of vaccinations if behaviors relax to prior levels of compliance with recommended masking and testing practices.
  - Vaccination levels continue to decline, putting the possibility for longer term declines in hospitalizations at risk.

- Red is if all behavior returns to unmitigated, pre-pandemic patterns (no masking/social distancing/business restrictions)

- Orange is if we continue behaviors of September ’21 (current absence of mask wearing/social distancing/business restrictions)

- Green is if we return to behavior patterns of Jun/Jul ’20 (limited masking/social distancing/business restrictions)

- Blue is if we return to behavior patterns of Oct/Nov ’20 (mask mandate/business restrictions; limited social distancing)
COVID-19 Hospitalizations in Tarrant County: Past, Present, and Future Forecasting

The blue line shows the estimated number of hospitalizations for the last three weeks, as well as our 21-day forecast starting from 10/26.

Tarrant County total COVID-19 hospitalizations are predicted to reach 220 concurrent hospitalized cases by November 15.

Roughly 270 new COVID-19 infections per day are expected by November 15.

COVID-19 hospitalizations (black squares) have decreased by 31% over the past two weeks.

Shaded regions in the model’s forecast represent 90% credible interval.
More About the Measures We Follow to Build the Model

- **Mobility** proxy measures indicate the degree to which residents are compliant with physical distancing, determined using data from cell phones and surveys.

- **Visits to the doctor** for COVID-like symptoms are a leading indicator that will likely rise ahead of hospitalizations.

- **Test percent (%) positivity** is a useful number to follow to make sure that enough tests are being done and to follow over time. If it goes up, then cases and hospitalizations follow. % positivity varies by the population tested. For example, the % positivity of samples from the emergency department would be different than that of a group of asymptomatic individuals.

- **Hospitalizations** trail new infections by 1-2 weeks but are not influenced by testing capacity or test reporting delays, thus giving us a clear picture of severe cases in the community.

- **Vaccinations** indicate the level of protection that is present in the community against severe disease.

- Based on testing and hospitalization data, we calculate **infection rates**, which indicate how prevalent COVID-19 is within an age group or community, and **R<sub>t</sub>**, which represents how many people 1 individual is likely to infect under current conditions.
How Mobile Are North Texans?

The graphs above show mobility trends through October 23 based on cell phone data. Visits to retail, recreation, and transit are near pre-pandemic levels in some counties. Time spent at home and visits to workplaces have not returned to pre-pandemic levels, likely reflecting a stable shift to working from home for a subset of the population.

Source: Google COVID-19 Community Mobility Reports accessed 10/26, data through 10/23
Masking and Vaccination Survey Responses in North Texas

Based on survey responses, observed mask usage in public places and self-reported mask usage have declined since mid-February, with a steep decrease from May to July. Rates have risen since mid-July in all four major DFW counties but may have plateaued.

The percentage of people reporting that they have been or are willing to be vaccinated remains high.

Source: Facebook survey results from Carnegie Mellon University’s Delphi Group. COVIDCast Real-Time Indicators, Accessed 10/26, data through 10/24
Cases of COVID-19 That Require Hospitalization and Test Positivity Rates Are Declining in North Texas

6% of COVID-19 tests are positive in the state of Texas.

Hospital volumes for COVID-19 have decreased 17% compared to one week ago and 31% compared to two weeks ago, and 56% compared to one month ago.
COVID-19 Hospital Admissions Are Largely Declining

- Hospital admissions for COVID-19 are declining in most age groups and counties, though absolute volumes remain relatively high and the rate of decline is slowing.

- Please note the differing scales for each county when reading the graphs at left. Data show location of hospital, not necessarily patients’ resident county.

Source: Admissions - NCTTRAC EMResource Master Data Set - County Level for data through 8/1/20-10/25/21
Undisclosed ages imputed using average regional age mix on the reported date
Includes both lab-confirmed and suspected COVID-19 admissions
Pediatric COVID-19 Hospital Admissions Are Declining and Are Now Below January Levels

COVID-19 Daily Hospital Admissions for Dallas, Tarrant, Collin and Denton County
By Age Group, % of Prior Peak

- Weekly admissions volumes are now below the prior January peak for all age groups.
- All age groups currently show declining rates of new hospital admissions in Dallas County.

Source: Admissions - NCTTRAC EMResource Master Data Set - County Level for data through 8/1/20-10/25/21
Undisclosed ages imputed using average regional age mix on the reported date
Includes both lab-confirmed and suspected COVID-19 admissions
Dallas County Infection Rates Are Declining Across Most Age Groups

- The redder the rectangle, the more cases per 100,000 people.
- Infection rates are declining in most age groups.

Source: Dallas County HHS, Accessed 10/26; data for positive tests with a specimen collection date of 10/16 or earlier
Infection Rates in Most Dallas County Cities Are Declining

- The redder the rectangle, the more cases per 100,000 people.
- Infection rates are declining in most cities in Dallas County.

Source: Dallas County HHS, Accessed 10/26; data for positive tests with a specimen collection date of 10/16 or earlier
\( R_t \) Represents Contagiousness

- \( R_t \) helps us measure how effective social distancing measures are after they are put into place.

- If social distancing and measures like masking are effective, then the number of secondary infections is dramatically reduced.

- In this scenario where social distancing measures were 50% effective, then only **five people** end up infected, rather than the original 31.
How Contagious Was COVID-19 in DFW Two Weeks Ago?

These graphs show the $R_t$ value as of two weeks ago, calculated using the date positive tests were collected. The $R_t$ value appears to be falling and was below 1 in Dallas County and Tarrant County.

Source: Dallas County HHS, Accessed 10/26/21 up to specimen collection date of 10/15/21; *Tarrant County PH, Accessed 10/4/21; data for positive tests with a specimen collection date of 9/22 or earlier