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

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About the Model

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 June 27-28. 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.
While the number of people hospitalized in the region remains relatively low, hospitalizations are expected to increase over the next several weeks. The local Rt value, which represents how effectively the virus is spreading, is above 1 in the region. Test positivity rates are high and increasing, indicating that many positive cases are being missed in official records, even as test volumes are increasing. Based on these trends, our medium-term forecast predicts that hospitalizations should continue to rise over the near-term but should remain at manageable levels over the next several weeks because of the low starting point. Hospitalizations could return to elevated levels by mid-summer if trends persist. Masking behavior is at the lowest levels observed since the start of the pandemic.

Vaccination remains our most powerful tool for preventing severe COVID-19. Although breakthrough infections are more common with Omicron than with previous variants, vaccinated individuals still have a significantly decreased chance of catching COVID-19 compared to unvaccinated individuals, and even more importantly, significantly decreased risk of hospitalization and death. All Texans over the age of 6 months are now eligible for vaccination, and everyone over the age of 5 is encouraged to get a booster. As part of our ongoing commitment to an equitable, effective, and efficient vaccination rollout, Texans aged 12 and older can schedule a vaccination appointment using UT Southwestern’s online scheduling portal: utswmed.org/vaccines.

Both nationally and locally, Omicron is now by far the dominant variant of the virus, representing nearly 100% of positive tests sequenced at UT Southwestern. The closely related BA.4/BA.5 Omicron sub-lineages are more transmissible and now represent over 50% of our samples, outcompeting the “original” BA.1 Omicron variant and subsequent BA.2 sub-lineage.

Based on the latest CDC “COVID-19 Community Levels” guidance, which considers hospital admissions and capacity, Dallas, Tarrant, Denton, and Collin Counties are currently low risk. Visit the CDC website for guidance on individual and household-level prevention measures recommended during times of low risk. The CDC “Community Transmission” levels for the DFW region, which consider new cases and test positivity, are currently high. Use of high-quality masks when appropriate, physical distancing, increased ventilation, staying home when feeling unwell, and other interventions recommended by health experts will help continue to curb transmission and protect the health of all Texans, especially those who are currently unvaccinated, unable to be vaccinated, 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.
COVID-19 Hospitalizations in Dallas County: Past, Present, and Future Forecasting

Hospitalized COVID-19+ Patients: Past and Predicted

- COVID-19 hospitalizations (black squares) are rising again.
- The blue line shows the estimated number of hospitalizations for the last three weeks, as well as our 21-day forecast starting from 6/28.
- Dallas County total COVID-19 hospitalizations may exceed 300 within the next several weeks.

Source: NCTTRAC EMResource Master Data Set - County Level for data through 8/1/20-6/27/22
Shaded regions in the model’s forecast represent 90% credible interval.
Dallas County’s Trajectory Is Increasing

- Total hospitalizations due to COVID-19 are expected to increase over the next several weeks.
  - Hospitalizations could return to elevated levels by mid-summer if trends persist.
  - These trends are influenced by reduced immunity over time from past infections during Delta and earlier waves, as well as the effect of more transmissible Omicron subvariants.
- Hospital admissions are primary driver of CDC recommendations for Dallas County but should remain at manageable levels over the next several weeks because of the low starting point.

**Lines**
- **Red Line** is if all behavior returns to unmitigated, pre-pandemic patterns with Omicron-like severity
- **Blue Line** is if we maintain our current trajectory

**Shading**
- **High Risk:** Recommend indoor masking
- **Medium Risk:** Recommend indoor masking for high-risk groups and their contacts
- **Low Risk:** Indoor masking is personal preference
COVID-19 Hospitalizations in Tarrant County: Past, Present, and Future Forecasting

- COVID-19 hospitalizations (black squares) are climbing again.
- The blue line shows the estimated number of hospitalizations for the last three weeks, as well as our 21-day forecast starting from 6/28.
- Tarrant County total COVID-19 hospitalizations could approach 200 over the next three weeks.

Hospitalized COVID-19+ Patients: Past and Predicted

Source: NCTTRAC EMResource Master Data Set - County Level for data through 8/1/20-6/27/22
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 **$R_t$**, 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 June 24 based on cell phone data. Time spent at home continues to decrease. Visits to other sites outside the home have increased as well.
Masking and Vaccination Survey Responses in North Texas

**In the past 7 days, did you wear a mask most or all of the time in public?**

**In the past 7 days, when you were in public places where social distancing is not possible, did most or all other people wear masks?**

**Have you already received a COVID vaccine, or if a vaccine were offered to you today, would you definitely or probably choose to get vaccinated?**

Based on survey responses, rates of observed mask usage in public places and self-reported mask usage rose during the peak of the last surge but are now back to their lowest levels since the start of the pandemic.

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

Cases of COVID-19 That Require Hospitalization Are Low; Test Positivity Rates Are Increasing in North Texas

Approximately 26% of COVID-19 tests are positive in the state of Texas.

Hospital volumes for COVID-19 have increased 28% compared to one week ago and increase 148% compared to one month ago.

Source (left): TX DSHS data through 6/26/22, Accessed 6/28/22
Source (right): TX DSHS Combined Hospital Data by TSA Region data through 6/26/2022
“North Texas” is defined as Trauma Service Area E, % increases compare trailing 7-day averages
COVID-19 Hospital Admissions Are at Low Levels, but Rising

- Hospital admissions for COVID-19 across all age groups and counties in the DFW area are at low levels, but are climbing quickly

- 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 8/1/20-6/27/22
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 Rising Across All Age Groups

- The redder the rectangle, the more cases per 100,000 people.
- Infection rates are low across all age groups but are rising quickly.
- Please note that the upper bound of the color scale is now 400 cases per 100,000 people, as compared to the recent upper bound of 1,000.

Source: Dallas County HHS, Accessed 6/28/22, data for positive tests with a specimen collection date of 6/18/22 or earlier.
Infection Rates in All Dallas County Cities Are Rising

- The redder the rectangle, the more cases per 100,000 people.
- Infection rates are low but rising quickly across Dallas County.
- Please note that the upper bound of the color scale is now 400 cases per 100,000 people, as compared to the recent upper bound of 1,000.

Source: Dallas County HHS, Accessed 6/28/22, data for positive tests with a specimen collection date of 6/18/22 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 Dallas Two Weeks Ago?

This graph shows the $R_t$ value in Dallas County as of one-to-two weeks ago, calculated using the date positive tests were collected. The $R_t$ value has been above 1 in Dallas County since May.

Source: Dallas County HHS, Accessed June 28; up to specimen collection date of June 22. Tarrant County data are no longer made available, so the Tarrant County graph has been discontinued.
