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 March 28-29. 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.
The number of people hospitalized in Dallas and Tarrant Counties has leveled off at near-record lows. These low levels are predicted to persist for the next several weeks. Supporting this forecast, test positivity rates remain very low locally and statewide, and both emergency room visits and new hospital admissions are flattening out at low levels. The local Rₜ value, which represents how effectively the virus is spreading, has been well below 1 since mid-January, indicating that the epidemic is declining in the region, though it has been climbing again in recent weeks. If current trends continue, our medium-term forecast predicts that hospitalizations will remain at low levels throughout the spring but may return to elevated levels by early summer if trends persist, likely driven by waning immunity from previous waves and the more transmissible BA.2 Omicron variant. Masking behavior continues to steeply decline, returning to 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 5 are now eligible for vaccination, and everyone over the age of 12 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 Omicron sub-lineage know as BA.2 remains less common in our samples than the “original” BA.1 variant, though the proportion of BA.2 samples has increased in recent weeks.

Based on the latest CDC “COVID-19 Community Levels” guidance, 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. 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) continue to decline.

- The blue line shows the estimated number of hospitalizations for the last three weeks, as well as our 21-day forecast starting from 3/29.

- Dallas County total COVID-19 hospitalizations should remain around 100 for the next several weeks.

- New COVID-19 infections are projected to remain around 100 new COVID-19 infections per day for the next several weeks.

Source: NCTTRAC EMResource Master Data Set - County Level for data through 8/1/20-3/28/22
Shaded regions in the model's forecast represent 90% credible interval.
Dallas County’s Trajectory Is on the Decline

- Hospitalization levels are expected to remain low over the next couple of months on the current trajectory.

- Hospitalizations could return to elevated levels by early summer if trends persist, likely driven by waning immunity from previous waves and the more transmissible BA.2 Omicron variant.

- Hospital admissions are the primary driver of CDC recommendations for Dallas County but should remain at a manageable level in the near future. Risk levels are shaded in different colors in the background of the graph below.

**Lines**
- **Red Line** is if all behavior returns to unmitigated, pre-pandemic patterns (no masking/social distancing/business restrictions)
- **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) have been rapidly declining this month.

The blue line shows the estimated number of hospitalizations for the last three weeks, as well as our 21-day forecast starting from 3/29.

Tarrant County total COVID-19 hospitalizations should remain below 100 for the next three weeks.

New COVID-19 infections are projected to remain below roughly 100 new COVID-19 infections per day over the next three weeks.
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 March 26 based on cell phone data. Visits to workplaces have rebounded to pre-holiday levels and time spent at home has decreased accordingly. Visits to other sites outside the home have increased as well.

Source: Google COVID-19 Community Mobility Reports accessed 3/29/22, data through 3/26/22
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 have declined steeply again recently.

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 and Test Positivity Rates Are Low in North Texas

Roughly 3% of COVID-19 tests are positive in the state of Texas.

Hospital volumes for COVID-19 have decreased 29% compared to one week ago and decreased 74% compared to one month ago.

Source (right): TX DSHS Combined Hospital Data by TSA Region data through 3/28/2022

“North Texas” is defined as Trauma Service Area E, % increases compare trailing 7-day averages.
COVID-19 Hospital Admissions Are Declining

- Hospital admissions for COVID-19 across all age groups and counties in the DFW area continue to decline.

- 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 8/1/20-3/28/22
Undisclosed ages imputed using average regional age mix on the reported date
Includes both lab-confirmed and suspected COVID-19 admissions
Declining COVID-19 Hospital Admissions Are Flattening Out

COVID-19 Daily Hospital Admissions for Dallas, Tarrant, Collin and Denton County
By Age Group, % of January 2021 Peak

- Weekly admissions volumes across all age groups are flattening out at low levels.

Source: Admissions - NCTTRAC EMResource Master Data Set - County Level for data through 8/1/20-3/28/22
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 Low Across Across All Age Groups

- The redder the rectangle, the more cases per 100,000 people.
- Infection rates are low across all age groups.
- Please note that the upper bound of the color scale is now 1,000 cases per 100,000 people, as compared to recent upper bounds of 1,400 or 2,000.

Source: Dallas County HHS, Accessed 3/29/22; data for positive tests with a specimen collection date of 3/19/22 or earlier
Infection Rates in All Dallas County Cities Are Low

The redder the rectangle, the more cases per 100,000 people.

Infection rates are low across Dallas County.

Please note that the upper bound of the color scale is now 1,000 cases per 100,000 people, as compared to recent upper bounds of 1,400 or 2,000.

Source: Dallas County HHS, Accessed 3/29/22, data for positive tests with a specimen collection date of 3/19/22 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 DFW Two Weeks Ago?

These graphs show the $R_t$ value as of one-to-two weeks ago, calculated using the date positive tests were collected. The $R_t$ value appears to have been well below 1 in Dallas and Tarrant Counties but has been climbing in recent weeks.

Source: Dallas County HHS, Accessed Mar 29; up to specimen collection date of Mar 22; Tarrant County PH, Accessed Mar 29; data for positive tests with a specimen collection date of Mar 21 or earlier