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

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Updated January 5 with data as of January 3-4
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 January 3-4. 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 for COVID-19 in North Texas has increased dramatically. Hospitalizations in Dallas and Tarrant Counties are projected to continue to increase rapidly in near term and will likely exceed previous peaks by the end of January. Gaps in data due to the holidays may mean that even these elevated numbers are an underestimation of the number of people hospitalized for COVID-19, which in turn may lead to an underestimation of the trajectory of hospitalizations in this forecast.

The highly transmissible Omicron variant has rapidly eclipsed the Delta variant in many areas of the U.S. and currently accounts for up to 90% of sequenced cases in the region that includes Texas and its surrounding states. Locally, Omicron is now by far the dominant variant of the virus, representing more than 95% of positive tests sequenced at UT Southwestern. Both the percentage and absolute number of positive tests among UTSW samples are also rapidly increasing, reflective of recent sharp jumps in the DFW area more broadly. Test positivity rates statewide are currently at their highest recorded level since the pandemic began and are still increasing. This means that the true number of cases is far higher than recorded case counts.

Levels of local transmission are the highest seen since the beginning of the pandemic and may increase further on the heels of recent holiday gatherings. There is a high likelihood of exposure at any large gathering because of the prevalence and high transmissibility of the Omicron variant, and self-isolation for 3-5 days and testing are recommended for those who attend such gatherings. Onward transmission may be possible as soon as 36 hours after exposure. Use of high-quality masks, physical distancing, increased ventilation, staying home when feeling unwell, and other interventions recommended by health experts will help 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.

A compelling study released by TX DSHS found that unvaccinated Texans were twenty times more likely to die from COVID-19. Vaccination remains our most powerful tool for preventing severe COVID-19. The vast majority of patients admitted to the hospital for COVID-19 in our area are unvaccinated. All Texans over the age of 5 are now eligible for vaccination, and everyone over the age of 16 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.

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 increased. Gaps in data due to the holidays may lead to an underestimation of the current number of people hospitalized for COVID-19, which in turn may lead to an underestimation of the trajectory of hospitalizations in this forecast.

The blue line shows the estimated number of hospitalizations for the last three weeks, as well as our 21-day forecast starting from 1/4.

Dallas County total COVID-19 hospitalizations are predicted to reach >1,200 concurrent hospitalized cases by the end of January.

Roughly 5,500 new COVID-19 infections per day are expected by the end of January.
Dallas County’s Trajectory Still Depends on Our Behavior/ Vaccination Success

- Estimates from this model will be less reliable due to holiday-related reporting distortions and uncertainty in Omicron-related parameters – public testing numbers appear significantly lower than what the growth in census appears to convey.

- These scenarios now include certain parameters specific to the Omicron variant, but these early estimates could be substantially revised as new data is collected.

- It is vitally important for at-risk patients such as the seniors and those with pre-existing conditions to get booster shots if it has been more than 6 months since their last dose, especially those living in congregate settings.

- Testing suspected exposures and symptomatic patients is our most important tactic in limiting the spread of this highly transmissible Omicron variant.

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

Orange is if we continue behaviors of December ’21 (current level 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)

Updated 1/5/22 with data from 1/3/22

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- Tarrant County total COVID-19 hospitalizations are predicted to reach >2,000 concurrent hospitalized cases by the end of January.

- Roughly 6,000 new COVID-19 infections per day are expected by the end of January.
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 January 1 based on cell phone data, with obvious holiday shifts in time spent at work and home. Time spent at home and visits to workplaces have not returned to pre-pandemic levels in general, likely reflecting a stable shift to working from home for a subset of the population.
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, 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 rose from mid-July to September but have fallen and plateaued since then. Given the high transmissibility of the omicron variant, masking is critically important in public.

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

Source: Facebook survey results from Carnegie Mellon University’s Delphi Group. COVIDCast Real-Time Indicators, Accessed 1/4/22, data through 1/1/22
Cases of COVID-19 That Require Hospitalization and Test Positivity Rates Are Sharply Increasing in North Texas

Roughly 34% of COVID-19 tests are positive in the state of Texas, the highest percentage recorded to date by far.

Hospital volumes for COVID-19 continue to sharply increase. Gaps in reporting due to the holidays may lead to an underestimation of the current rate of increase.

Source (left): TX DSHS data through 1/2/22, Accessed 1/4/22
Source (right): TX DSHS Combined Hospital Data by TSA Region data through 1/4/2022
“North Texas” is defined as Trauma Service Area E, % increases compare trailing 7-day averages

Updated 1/5/22 with data from 1/4/22
COVID-19 Hospital Admissions Accelerating Very Rapidly

- Hospital admissions for COVID-19 are accelerating very rapidly across most age groups and counties in the DFW area.

- Please note the differing scales for each county when reading the graphs at left. Data show location of hospital, not necessarily patients’ resident county.
Dallas County Infection Rates Growing Rapidly Across All Age Groups

- The redder the rectangle, the more cases per 100,000 people.
- Infection rates are rising rapidly across all age groups, including sharp increases among those in the 20-40 age group.

Source: Dallas County HHS, Accessed 1/4; data for positive tests with a specimen collection date of 12/25 or earlier
Infection Rates in All Dallas County Cities Are Climbing

| City         | 20/03/21 | 20/04/18 | 20/05/16 | 20/06/13 | 20/07/11 | 20/08/08 | 20/09/30 | 20/10/03 | 20/10/31 | 20/11/28 | 20/12/16 | 21/01/23 | 21/02/20 | 21/03/04 | 21/04/17 | 21/05/15 | 21/06/12 | 21/07/10 | 21/08/07 | 21/09/04 | 21/10/02 | 21/11/02 | 21/11/27 | 21/12/25 |
|--------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Addison      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Balch Springs|          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Carrollton   |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Cedar Hill   |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Coppell      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Dallas       |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DeSoto       |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Duncanville  |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Farmers Branch|        |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Garland      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Grand Prairie|          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Irving       |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Lancaster    |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Mesquite     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Richardson   |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Rowlett      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| University Park|      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |

- The redder the rectangle, the more cases per 100,000 people.
- Infection rates are now increasing across Dallas County.

Source: Dallas County HHS, Accessed 1/4, data for positive tests with a specimen collection date of 12/25 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 far above 1 in Dallas County as of late December. Data from Tarrant County is made available less frequently, but based on other signals we monitor, its $R_t$ is also well above 1.

Source: Dallas County HHS, Accessed 1/4/22; up to specimen collection date of 12/21/21; *Tarrant County PH, Accessed 12/24; data for positive tests with a specimen collection date of 12/20 or earlier.