The purpose of the COVID-19 Status Viewer is to provide situational awareness of the developing pandemic spread, magnitude and trends of the COVID-19 coronavirus in Texas.

The viewer provides a representation of affected counties as of the indicated date and the cumulative statewide and per county positive test case counts. Information for Texas counties also states whether community spread has occurred and the number of fatalities. The status of surrounding states, represented by the blue circles, provides the most recent cumulative positive test cases in each state.
Reports and graphs are accessible in the viewer, including the cumulative positive test case counts in Texas since March 5, population and socioeconomic statistics for Texas, health insurance coverage, and other measures. In addition, charts showing forecast model results of the pandemic spread are presented for understanding the rapid rate of increase of coronavirus infection and the level of social intervention required to reduce and delay potentially catastrophic impacts. The UT COVID-19 Modeling Consortium led by Dr. Lauren Ancel Meyers of the University of Texas Department of Integrative Biology provides the numerical modeling results.

This viewer is part of a suite of MOVES *(Modeling, Observation & Visualization for Emergency Support)* applications created and maintained by the University of Texas *Center for Space Research.*

**Exploring Data in the Viewer:**

To access the viewer, point your web browser to: https://moves.csr.utexas.edu/covid19/

(Chrome, Firefox, Safari and other commonly used browsers are supported.)

You will see a county map of Texas showing which counties have laboratory confirmed test cases for the COVID-19 illness since early March. Color designations and other features are described below. The total **cumulative positive test case count** and **number of counties** affected is displayed in the title bar (upper left corner). The date/time in the upper right corner indicates when the data in the viewer was last updated.

To pan and move around in the map, simply click and drag the hand-shaped cursor symbol. This is the default mouse cursor. To zoom in and out on the map, use the + and – buttons in the top left corner. Alternatively, you may use the wheel on a mouse.
To return to the default extent, simply click on the Earth symbol

On the default map, you will see the affected counties for which positive test cases are known in the state. The graduated colors represent the cumulative number of COVID-19 positive test case counts by county. Light beige indicates lower counts, while dark orange indicates counties with the highest counts. Counties without a color indicate no reported positive test cases. Clicking on the county will display a call-out box with the latest numbers, fatalities, and whether community spread is considered to be occurring. According to the CDC, **community spread** means *people have been infected with the virus in an area, including some who are not sure how or where they became infected*. A graph showing positive tests over time for that county will also appear. This is further described below. Keep in mind that the lack of a positive test case in a county may reflect limited testing done for COVID-19 and not the complete absence of actual coronavirus cases in that area.
Use the **State Numbers** tool to toggle on and off the blue circles showing status by state. Click on a blue circle to see the status for an entire state. Click X to dismiss.
Clicking on the **Table** tool will display the Top 20 Counties per Capita Cases per Population. The ranked counties are listed on the right side of the viewer panel. The Cases per Capita (*1000) are displayed by default.

<table>
<thead>
<tr>
<th>Rank</th>
<th>County</th>
<th>Cases</th>
<th>Per Capita</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Moore</td>
<td>295</td>
<td>14.0879</td>
<td>20940</td>
</tr>
<tr>
<td>2</td>
<td>Donley</td>
<td>24</td>
<td>7.3215</td>
<td>3278</td>
</tr>
<tr>
<td>3</td>
<td>Panola</td>
<td>164</td>
<td>7.0708</td>
<td>23194</td>
</tr>
<tr>
<td>4</td>
<td>Sherman</td>
<td>14</td>
<td>4.6327</td>
<td>3022</td>
</tr>
<tr>
<td>5</td>
<td>Potter</td>
<td>499</td>
<td>4.2499</td>
<td>117415</td>
</tr>
</tbody>
</table>

To display a map showing the Cases Per Capital (*1000), click the **PC** button on the far right. The map will appear on the main viewer screen. Clicking on a county will display the basic numbers again plus cases per capita. Click the **PC** button again to return to the default map.
Click on this tool to display the Fatalities per Capita (*1000).

To display a map showing the Fatalities Per Capital (*1000), click the **PF** button on the far right. As before, the map will appear on the main viewer screen. Clicking on a county will display the basic numbers again plus cases per capita and cases per fatalities. Click the **PF** button again to return to the default map.

Click on the **Table tool** again to dismiss.
Use the **Summary Stats** tool to view a graph showing the cumulative positive test cases of COVID-19 in Texas since March 5, 2020. Hovering the mouse over the nodes along the blue curve will display a dynamic label showing the date and test case numbers as they change through time. Information in the graph is updated daily. A reference curve (green) illustrates a 8.5-day exponential doubling time for rising case numbers. Moving the blue curve below the green curve ("bending the curve") is the first step in containing the dangerous spread of COVID-19. Clicking on the bar graph symbol in the legend displays the 3-Day Running Mean New Cases. The changes in case rates are represented by a 3-day average that sums the values for each successive date with the prior two dates and divides by 3.

In the upper right corner of this graph, you will see a button allowing the user to download an image of the graph. The chart may be downloaded in multiple formats including PNG, JPG, PDF, SVG, and XLXSX.
Click on this tab at the top of the window to see a bar chart showing the **Daily Case Growth Rate for COVID-19**. The bars represent percent change. Blue indicates an increase in cases on that date. Red shows a decrease in cases. This doesn’t mean that the number of cases dropped over all, just as it compares to the running 3-day mean. Hovering the cursor over a bar will display the percent increase or decrease.

Click this tab to return to the cumulative cases chart.

Click the tool again or anywhere outside the chart window to dismiss.
Select the Infographics tool to access additional graphs and information for Texas. After clicking on the tool, you will be presented with a search screen. Begin typing a county name in Texas. A drop-down list will auto-populate with suggestions. Click on the appropriate county to display the graphs.

You may toggle between multiple pages of data by using these navigation tools:
The graphs and information in the panels display Texas data related to population, demographic and socioeconomic statistics, the latest numbers of COVID-19 positive test cases, and health insurance coverage by category. This infographic is updated once or twice daily.

To expand the panels to full page, click on the Open Full Site button.

Most of the items in these panels can be clicked to bring up more detailed information or graphs.

For example, clicking on the Licensed Beds item will display a list of hospitals and types of beds.

<table>
<thead>
<tr>
<th>Hospital Name</th>
<th># of ICU Beds</th>
<th># of Licensed Beds</th>
<th># of Staffed Beds</th>
<th>Potential Increase in Bed Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>St Davids Medical Center</td>
<td>70</td>
<td>374</td>
<td>350</td>
<td>24</td>
</tr>
<tr>
<td>Ascension Seton Medical Center Austin</td>
<td>83</td>
<td>524</td>
<td>430</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Clicking on items in the Health Insurance Coverage bar chart will reveal additional statistics not shown on the chart.

A filter tool allows the user to adjust the parameters and refine their results.
The model tool allows the user to review the numerical modeling results for the spread of COVID-19 produced the UT COVID-19 Modeling Consortium led by Dr. Lauren Ancel Meyers of the University of Texas Department of Integrative Biology. The charts reflect five different scenarios from model runs performed under different initial conditions: 1) No social distancing, 2) Schools are closed, 3) Schools closed and 50 percent reduction in contacts, 4) Schools closed and 75 percent reduction in contacts and 5) schools closed and 90 percent reduction in contacts. The charts record the impacts on the numbers of COVID-19 cases, hospitalizations, ICU beds needed and ventilators needed for each of the five scenarios.
The Regional Model tool is used to access information about each of the 22 Metropolitan Statistical Areas (MSA) that are modeled for the spread of COVID-19 infection by the UT COVID Consortium. The MSA boundaries are shown in blue below. Clicking on an MSA displays a call-out box identifying it.
Click on the **Area Charts** link to bring up 5 charts reproduced from the UT COVID Consortium report, *“COVID-19 Healthcare Demand Projections: 22 Texas Cities”*. These model charts display weekly incident cases, hospitalizations, ICU beds required, ventilators needed and cumulative deaths for each MSA. Below is one example.

The full PDF report can be accessed by clicking on the link in the call-out box called **22 Cities Report 4/3/20 Report** or by clicking **Link to the Full Report** at the bottom of the chart.

Click **Zoom to Area** to zoom the map extent to that particular MSA.
This tool, located in the title bar (the upper right corner) allows the user to access the User Guide and view the metadata information about the data used in the viewer.

Click on the User Guide link to open a user guide describing how to use the tools in the viewer. Related links are provided at the bottom.
Related COVID-19 links:

COVID-19 Global Cases (Johns Hopkins University, CSEE: Center for Systems Science & Engineering):
https://nnddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6

University of Virginia (Biocomplexity Institute, NSSAC: Network Systems Science & Advanced Computing division):
Project COVID-19 Details: https://covid19.biocomplexity.virginia.edu/
Dashboard & Data: https://biocomplexity.virginia.edu/

UT Austin COVID-19 Modeling Consortium:
https://covid-19.tacc.utexas.edu/

Pandemic model showing the importance of social distancing in 22 Texas Cities (University of Texas at Austin):

Texas Department of State Health Service (DSHS) COVID-19 Update Page:
https://www.dshs.texas.gov/news/updates.shtm#coronavirus

Centers for Disease Control and Prevention:

World Health Organization (WHO):
https://www.who.int/emergencies/diseases/novel-coronavirus-2019

ESRI Disaster Response Program:

COVID-19 GIS HUB (ESRI):
https://coronavirus-resources.esri.com/?adumkts=industry_solutions&aduse=local_state&aduc=email&adum=list&utm_Source=email&aduca=mi_smart_communities&aduco=coronavirus_hub_resources&adut=950533&adupt=awareness&sf_id=7015x000000iQIAAA2&aducp=operational_second_body_text
Service Endpoints used in Viewer:

The following REST web service endpoints allow interested parties to access the data services and use the same data that we are using in our application via JSON format. This data is updated periodically throughout the day as we receive, perform quality analysis (QA), and persist the data.

Latest values from affected counties:
https://uws-sec-ng3.csr.utexas.edu/ida_gauges/api/ahps/covid19/affected_counties/

Latest for whichever county input:
https://uws-sec-ng3.csr.utexas.edu/ida_gauges/api/ahps/covid19/counties/Dallas

For any given date input (format like 3-24-2020):
https://uws-sec-ng3.csr.utexas.edu/ida_gauges/api/ahps/covid19/rollup_numbers/3-24-2020

For the accumulated statewide counts since the beginning:
https://uws-sec-ng3.csr.utexas.edu/ida_gauges/api/ahps/covid19/statewide_counts/