Impact of COVID-19 on Vulnerable Populations in Texas

Texas Health and Human Services

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Contents

Executive Summary

Multiple demographic, socioeconomic, and other nonmedical factors are associated with increased risk of morbidity and mortality due to COVID-19:

- Results from multiple studies have found associations between race/ethnicity and COVID-19 infection rates.
- Results from multiple studies have found associations between race/ethnicity and poor health outcomes after COVID-19.
- According to the Centers for Disease Control and Prevention (CDC), the risk for severe illness after exposure to coronavirus increases with age.
- Certain social determinants of health put communities at greater risk for negative health outcomes associated with COVID-19 infections. Social determinants of health are a person's living, learning, working, playing, and aging conditions that affect health and quality of life.

The Texas Health and Human Services Commission (HHSC) has commenced a study to examine the impact of the COVID-19 pandemic on vulnerable Texans. The focus is specifically on race/ethnicity, age and persons who use public benefits.

The study will be conducted in two phases:

- Phase 1 is foundational. HHSC has created dashboards to visualize high-level descriptive information about COVID-19 among different populations. The results of Phase 1 are presented in this current report.
- Phase 2 will include more in-depth and nuanced analyses to test the statistical significance of noted trends and attempt to identify possible causes of those trends.

This report outlines the information and data that have been collected to allow HHSC to begin conducting Phase 2 detailed analyses. The literature review summarizes background and clinical history data available to date. This report also describes available data sources and the strengths and weaknesses of each. In addition, this report describes a preliminary approach to Phase 2.

From the available data sources, HHSC created the following interactive dashboards:

1. County-level Vulnerability and COVID-19 Measures
2. COVID-19 Fatalities
3. Texas Medicaid and CHIP COVID-19 Service Utilization

4. Texas Medicaid and CHIP COVID-19 Demographics

Upcoming dashboards under consideration include data collected on applications for state benefits such as Medicaid/CHIP and the Supplemental Nutrition Assistance Program (SNAP).

The dashboards created by HHSC that are described in this report should not be used for daily tracking. They are meant to report on high-level descriptive information about the pandemic as a whole, rather than to provide daily updates. For more current information, please refer to the DSHS COVID-19 dashboard, *which is updated daily.*

The purpose of the dashboards described in this report is to share information with the public and the Texas Legislature, as well as to help other researchers who are working on this or other COVID-19 studies.

1. Introduction

As Texas and the rest of the nation respond to the COVID-19 pandemic, leadership in divergent areas have noted the varying impacts of the disease on different populations. HHSC is studying the characteristics and magnitude of the impact of COVID-19 specifically on vulnerable Texans.

This study, led by HHSC, requires extensive collaboration between HHSC, the Department of State Health Services (DSHS), and specific subject matter experts with medical and epidemiological backgrounds. To facilitate this coordination, HHSC established a Clinical Resource Expertise Group, comprised of clinical, public health, and policy experts from HHSC and DSHS. This group will provide guidance and feedback on the project.

This study takes a methodical, structured and rigorous approach that will involve evaluating data, generating and testing hypotheses, and increasing knowledge about the impact of COVID-19. The study will be conducted over two phases.

Phase 1 is exploratory, beginning with a comprehensive literature review and evaluation of immediately available data resources. HHSC has gathered data from HHSC programs, DSHS, and other appropriate sources to better understand COVID-19 outcomes across Texas. Analytic dashboards have been created to display trends and patterns and inform the research questions.

This report summarizes the progress, barriers and achievements of Phase 1. In the Fall of 2021, HHSC will issue a second report for Phase 2 that will expand on insights gained from Phase 1. The Phase 2 report will include in-depth and nuanced analyses to test the statistical significance of observed trends. This information will support the attempt to identify possible causes related to those trends. The conclusions drawn from the descriptive and inferential analyses will drive recommendations to public health and policy leaders, and the Texas Legislature.

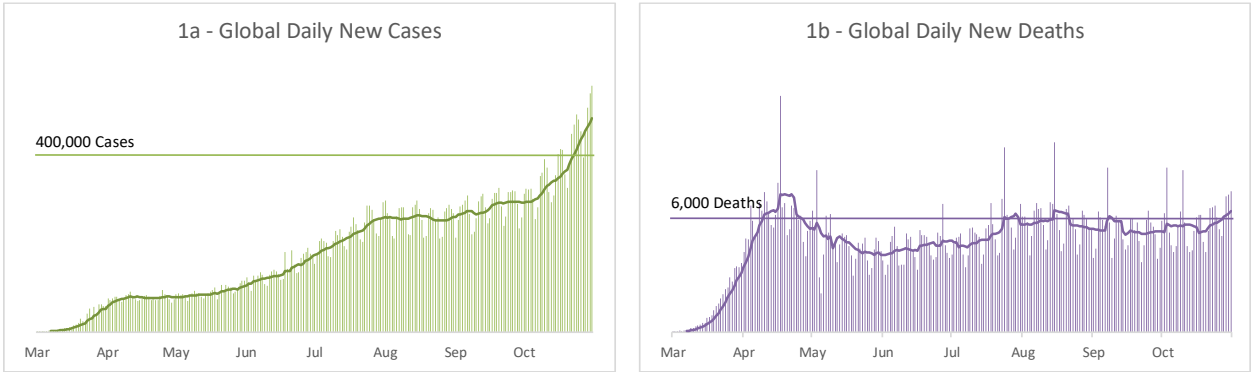
2. Background

The 2019 novel coronavirus (SARS- CoV-2), or COVID-19, first detected in Wuhan, China in late December 2019, quickly spread internationally.[1] The first confirmed case in the United States was reported on January 21, 2020. The virus spread within the United States beginning in February and transmission accelerated in March.[2] The first case in Texas was detected on March 5, 2020 and the first death attributed to the virus was on March 15, 2020.[3] COVID-19 has few modern precedents. Knowledge of the virus' history, as well as of COVID-19 prevention, diagnosis, and treatment, is rapidly evolving. Researchers have learned more about possible symptoms and characteristics of those more likely to become seriously ill when infected. Various efforts to develop possible treatments and vaccines are underway.

Overview of World, National and State Trends (as of October 31, 2020)

The number of global daily cases approached 300,000 in late July/early August 2020, and after that point cycled between around 200,000 to 300,000 cases per day until around mid-October. Since then, through the end of October, the number of global daily cases has been steadily increasing to around 500,000 cases per day (Figure 1a). Between mid-April and the end of October, the number of daily deaths has been generally cycling between 4,000 to 6,000 per day with a few higher spikes near 10,000 (Figure 1b). As of October 31, 2020, approximately 45 million total cases of COVID-19 have been reported worldwide.[4]

Figure 1 – Global Number of COVID-19 Cases and Deaths, March through October 2020

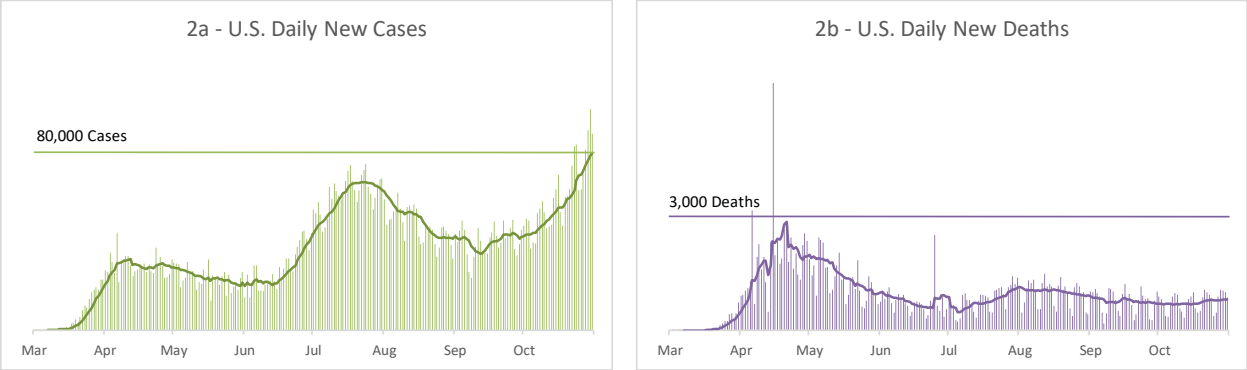


Source: World Health Organization

In the United States, the number of new cases per day reached a high point in mid-to-late April (at about 35,000 cases) and then continued to fall until mid-June. At that point, the number of daily new cases rose again until reaching a peak in late

July (at about 70,000 cases) before falling again until mid-September (at around 40,000 cases). The number of daily new cases has been rising since then, through the end of October (Figure 2a). The number of current hospitalizations followed a similar pattern, peaking in late April and late July at almost 60,000 hospitalizations each time. The number of current hospitalizations then fell until late September (around 30,000 hospitalizations) and has been rising since then, as of the end of October. The number of COVID-19 tests performed in the United States as of October 31, 2020 was about 148 million. The number of deaths peaked in late April (at around 2,700) and reached a low point in early July (Figure 2b). Approximately 9 million cases of COVID-19 have been reported in the United States as of October 31, 2020. Based on reported data on COVID-19 cases by the COVID Tracking Project, the United States has the highest number of COVID-19 cases in the world as of the end of October.[5]

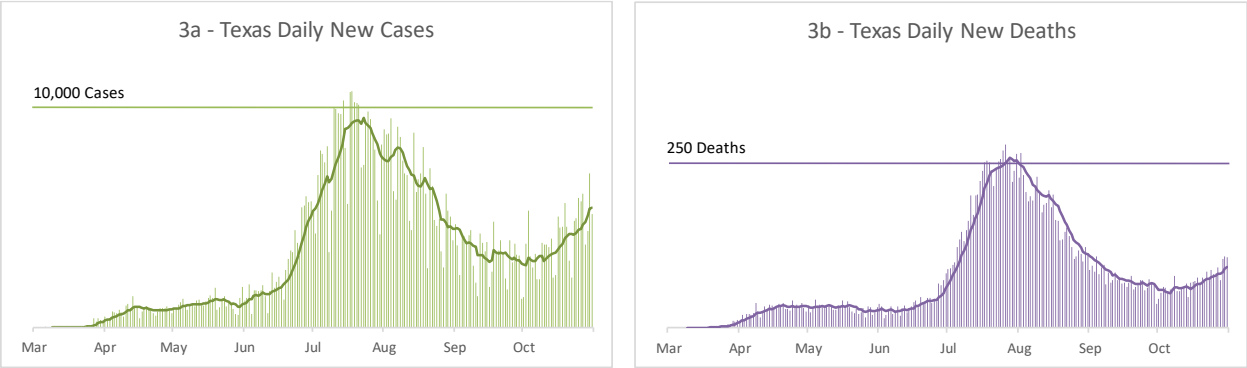
Figure 2 – Number of COVID-19 Cases and Deaths in the United States, March through October 2020



Source: Centers for Disease Control and Prevention

Figure 3 shows the number of COVID-related deaths in Texas. Based on provisional death certificate data, COVID-19 is currently the third leading cause of death in Texas (after heart disease and cancer). Prior to the COVID-19 pandemic, cerebrovascular disease/stroke had been the third leading cause of death in Texas for many years.[6]

Figure 3 - Number of COVID-19 Cases and Deaths in Texas, March through October 2020



Source: Department of State Health Services

Risk Factors and Vulnerability to Severe COVID-19 Outcomes

Multiple demographic and socioeconomic factors are associated with increased risk of morbidity and mortality due to COVID-19. Many of these factors, such as race, ethnicity, and indicators of area-level socioeconomic status, are highly correlated with each other. Below is a review of current literature related to the impact COVID-19 is having on certain racial/ethnic and socio-economic groups. Each demographic or socioeconomic factor is discussed individually.

Demographics

Many studies describe demographic differences in COVID-19 risk. According to the Centers for Disease Control and Prevention (CDC), the risk for getting severe illness because of exposure to coronavirus increases with age, with the highest risk among adults 85 and older.[7] While 8 out of 10 reported deaths in the United States have been among adults age 65 or older, increased risks of complications and death exist for every age group 30 and over (30-39 years, 40-49 years, etc.) when compared to adults age 18-29.[8]

Data show that the virus has also impacted racial/ethnic groups differently. According to a CDC data set, 34 percent of confirmed cases were among Black/African Americans, while Black/African Americans account for only 13 percent of the total United States population.[9] In the District of Columbia, Black/African Americans comprise 45 percent of the population and accounted for 29 percent of confirmed cases and 59 percent of deaths as of April 6, 2020.[10]

Results from multiple studies have indicated racial/ethnic differences in the risk of being hospitalized for COVID-19. In one study done in a health system in California, Black/African Americans were 2.7 times more likely to be hospitalized, after

adjusting for age, sex, comorbidities, and income, compared to non-Hispanic White patients.[1] Similarly, another study found that Black/African Americans accounted for 33 percent of COVID-19 hospitalizations while representing 18 percent of the sample population.[11]

Multiple studies also show a higher death rate among Black/African Americans compared to other races/ethnicities.[3,12-15] For example, an analysis of Texas data from March 1 through April 8, 2020 found that the areas with the highest case fatality rates (>10%) had larger proportions of non-Hispanic Black/African American residents and had larger proportions of adults age 65 and older. The analysis used county-level case and mortality data from the Johns Hopkins 2019 Novel Coronavirus Data Repository.[3]

Socioeconomic Factors and Nonmedical Drivers of Health

Certain characteristics of socioeconomically disadvantaged areas put residents of those areas at greater risk for negative outcomes associated with COVID-19 infections. For example, multiple studies have found associations between less access to care and increased COVID-19 prevalence, incidence or mortality.[3, 14,16-17] Studies in Texas and Georgia found that areas with higher death rates had lower numbers of ICU beds per 100,000 population. Areas with lower household income also tend to have lower numbers of primary care physicians per 10,000 or 1000 population.[3,14] However, some studies do not find associations between COVID-19 mortality and access to care, such as a study done by the MIT Center for Energy and Environmental Policy.[15] The differences in findings suggest the need to look further into the effects of access to care on COVID-19 outcomes.

Similarly, an analysis examining patterns of COVID-19 across counties in Colorado found that a lack of health insurance and overcrowded housing were associated with higher COVID-19 incidence. According to the same study, poverty and unemployment were associated with higher case fatality rates.[16]

Finally, a study of COVID-19 spatial "hot spots" in Chicago and New York City (NYC) found higher rates of COVID-19 in lower-income neighborhoods in Chicago. However, the pattern in NYC was less clear, with higher rates in some communities considered working-class and middle-income.[18] Another study done in NYC, in Queens, showed higher rates of people without health insurance and of avoidable hospitalizations in areas with an "extremely high" number of cases when compared to areas with a "moderate" number of cases.[17]

Comorbid Conditions

According to the CDC, people with cancer, chronic kidney disease, chronic obstructive pulmonary disease (COPD), serious heart conditions (such as heart

failure, coronary artery disease or cardiomyopathies), sickle cell disease, type 2 diabetes, obesity (Body Mass Index [BMI] between 30 and 40) or severe obesity (BMI greater than 40), who are immunocompromised from solid organ transplant, who are pregnant, and/or who smoke are at increased risk of severe illness due to COVID-19. Those conditions had the "strongest and most consistent evidence" based on information reviewed by the CDC. The conditions with more mixed evidence include asthma, cerebrovascular disease, cystic fibrosis, hypertension, neurologic conditions such as dementia, liver disease, pulmonary fibrosis, type 1 diabetes, being in an immunocompromised state from blood or bone marrow transplant, immune deficiencies, HIV, use of corticosteroids, or use of other immune weakening medicines and being overweight (BMI between 25 and 30).[19]

Using data from the Behavioral Risk Factor Surveillance System (BRFSS), one study found that among individuals who were younger than 65 years, 33 percent of Black/African American adults, 42 percent of American Indian or Alaska Native (AI/AN) adults, and 27 percent of White adults had at least one of the CDC's criteria for risk of severe illness from COVID-19. Eighteen percent of American Indian adults and 11 percent of Black/African American adults, in comparison to eight percent of White adults, had multiple risk factors. And, when individuals older than 65 years were examined, 69 percent of AI/AN, 61 percent of Black/African American adults, and 54 percent of White adults had at least one of the CDC risk factors that contribute to severe COVID-19 illness. These findings suggest that racial/ethnic minorities may be at higher risk for severe COVID-19 in part due to the higher prevalence of comorbid conditions among these populations.[20]

Other Vulnerable Communities

People who live in shared housing, such as nursing homes, assisted living facilities and correctional facilities, are particularly vulnerable to contracting COVID-19. In nursing homes and assisted living facilities, having a population already at risk (due to age and/or existing chronic conditions), frequent contact between staff and residents, understaffing, and shortages of Personal Protective Equipment (PPE) all contribute to a greater risk.[21-24] In correctional facilities, challenges with achieving social distancing and having a population already at risk (due to age and/or existing chronic conditions) contribute to a greater risk.[25-28]

A study done in New York City found that residents in institutional facilities or group homes for people with intellectual or developmental disabilities (IDD) were more than five times more likely than the general population to contract COVID-19.[29]

In another study by the CDC, IDD was a risk factor for contracting COVID-19, independent of underlying chronic conditions (i.e., lung disease, cardiovascular disease and diabetes).[29-30] In New York State, fatality rates among the population

with IDD were 214 deaths per 100,000 for people with disabilities, compared with 86 deaths per 100,000 for New Yorkers in general. The fatality rate was approximately 2.5 times higher among this population than among New Yorkers as a whole. The authors suggested that the higher death rate was due to many possible factors, such as this population's reliance on caregivers for daily living, structural inequities such as long-term poverty, and inadequate access to healthcare and specialty care. The data are even more concerning for people with IDD living in residential group homes. In a study focused specifically on individuals with IDD living in residential group homes in New York, the authors reported:

- case rates of 7,841 per 100,000 for people with IDD, compared to 1,910 for New York State;
- case-fatality rates of 15.0 percent for people with IDD, compared to 7.9 percent for New York State; and
- mortality rates of 1,175 per 100,000 for people with IDD, compared to 151 per 100,000 for New York State.[31]

Another population at greater risk is essential workers, such as health care and grocery store employees. They can be more at risk due to issues such as exposure to more people than if they were able to work remotely, PPE shortages, and safety regulations varying by state and workplace.[32-33] Also, minority populations make up a large percentage of many types of workers considered "essential" and this contributes to COVID-19 disproportionally affecting minority populations.[34]

A CDC report suggests that pregnant women with COVID-19 are at increased risk for hospitalization and ICU admission but at a similar risk of death as non-pregnant women.[35] An additional CDC report reported a slightly higher prematurity rate for pregnant women hospitalized with COVID-19 compared to the general US population.[36]

Indirect Effects of COVID-19 on Health, Behaviors and Health Services

The COVID-19 pandemic and the resulting social isolation and economic impact have negatively affected the mental health of many adults and children. The pandemic has also disrupted health care for non-COVID-19 conditions, with patients delaying or avoiding care. However, increased use of telehealth may have mitigated these declines for some in-person services.

Seeking Medical Care

The COVID-19 pandemic has disrupted Americans' use of routine and emergency medical care. One study administered a web-based survey to assess American

adults' use or avoidance of medical care. This Outbreak Public Evaluation Initiative survey was administered between June 24 and June 30, 2020. Overall, due to concerns about COVID-19, almost 41 percent of Americans reported delaying or avoiding any medical care, 12 percent avoided urgent or emergency care, and 31.5 percent avoided routine care. The following groups were significantly more likely to avoid urgent or emergency medical care: unpaid caregivers, individuals with two or more underlying medical conditions, individuals with health insurance, Black/African American adults, Hispanic adults, young adults (18 to 24 years), and persons with disabilities.[37]

Behavioral Health

Adults

One study compared the prevalence of depression before the COVID-19 pandemic to during the COVID-19 pandemic using two data sets: the National Health and Nutrition Examination Survey (NHANES) to assess pre-COVID-19 depression prevalence, and the COVID-19 and Life Stressors Impact on Mental Health and Well-being survey (CLIMB) to assess depression prevalence during the COVID-19 pandemic. The prevalence of mild depression, moderate depression, moderately severe depression, and severe depression were higher during the COVID-19 pandemic in comparison to before the pandemic. Depression symptoms were also three times higher. Having a lower income, having less than $5,000 in savings, and exposure to more stressors were associated with a higher risk of depression symptoms.[38]

Another study used the RAND corporation's American Life Panel (ALP), a nationally representative, probability-based panel of more than 6,000 participants who are regularly interviewed over the internet, to assess the impact of the pandemic on alcohol use by comparing pre-COVID-19 alcohol use (April 29, 2019 to June 9, 2019) to current usage during the ongoing pandemic (May 28, 2020 to June 16, 2020). They found that alcohol use increased during the pandemic period compared to a year prior. During a 30-day time frame, alcohol consumption increased by:

- 14 percent (.74 days) across all groups examined;
- 17 percent (.78 days) for women;
- 19 percent (.93 days) for adults age 30 to 59 years; and
- 10 percent (.66 days) for non-Hispanic White individuals.

Women also reported a significant increase in heavy drinking (defined as four or more drinks for women within a few hours), which indicated that ten percent of women had an increase in alcohol-related problems independent of consumption level.[39]

Children

An ongoing longitudinal study on children's mental health in two counties in Chizhou, Anhui Province, China compared the mental health of children ages 10-14 years pre-pandemic (early November 2019) to during the pandemic (data collected mid-May 2020, two weeks after schools reopened). The study found that during the pandemic and resulting social isolation, the students had a significantly greater prevalence of depressive symptoms, non-suicidal self-injury, suicidal ideation, suicide plans, and suicide attempts. No differences in anxiety symptoms between the two periods tested were found.[40]

In a survey of parents with children under 18 in the United States, fourteen percent of parents reported that their children had worse behavioral health compared to before the pandemic. The survey was conducted in June 2020 using a large online research panel.[41]

3. Measuring COVID-19 Impacts in Texas

In Phase 1, HHSC examined the available COVID-19-related data in Texas to evaluate their strengths and weaknesses. Many of the data sources available in Texas have a time lag between when an event occurs and when the event is available in that data source. The COVID-19 pandemic is a rapidly changing situation, which limits the ability to use these sources to track the pandemic with daily up-to-date information. For Phase 1 of the study, HHSC has created several dashboards and made them available to provide the public and stakeholders with preliminary information related to the impact of the pandemic. *The dashboards created by HHSC that are described in this report are meant to report on high-level descriptive information about the pandemic as a whole, not to provide daily updates.* Their purpose is to share information with the public and the Texas Legislature, as well as to help other researchers who are working on this or other COVID-19 studies. The dashboards will be updated on a monthly basis.

After examining the strengths and weaknesses of multiple data sources, the following datasets were selected for Phase 1 of the study. Together, these data sources allow HHSC and other researchers to develop an understanding of how COVID-19 is impacting Texans.

Person-Level Data

COVID-19 Case Investigations

Investigations are initiated when a person has tested positive for COVID-19 or has had contact with a confirmed case. Results of COVID-19 tests are reported to the Texas National Electronic Disease Surveillance System (NEDSS). Since 2004, NEDSS has been the primary disease surveillance system utilized by public health epidemiologists at the local and state level across Texas to monitor and respond to most notifiable infectious disease conditions. It plays a critical role in preventing further transmission of infectious diseases in Texas primarily through the rapid processing and distribution of Electronic Lab Records (ELRs) for notifiable conditions.

ELRs are the primary trigger for public health disease investigations. Local health entities (LHEs) are responsible for conducting COVID-19 case investigations. The primary goal of the disease investigation is to halt disease transmission. However, it also offers an extremely valuable opportunity for collecting information on socio-demographic characteristics, residence type, symptoms and comorbidities.

As of the writing of this report, the NEDSS data are not available to HHSC for inclusion in the dashboard phase of this study. Since the beginning of the COVID-19 pandemic, average daily ELR production has increased by over 5,000%. Because of this, DSHS has added flexibility to NEDSS and the ELR submission process – a change that facilitated transmission of records from facilities, but also increased the propensity for receiving incomplete and erroneous data from submitters. DSHS has developed a comprehensive method for validation utilizing an advanced integration engine along with a validation team of specialized epidemiologists to review and consult with labs on errors and corrections needed.

In the months to come, the NEDSS data will be examined and incorporated into our plans for Phase 2. For more information on NEDSS and DSHS's COVID-19 surveillance process, see Appendix A.

Texas Death Certificates

Death certificate information is collected by the DSHS Vital Statistics Section (VSS). While its primary purpose is legal and administrative documentation, death certificate data can also be used for public health surveillance and is dependent on a certifier stating the cause of death. The data include demographics, information on the primary cause of death, and information on underlying causes of death. While the information is provisional, it is timely, as death certificates must be filed within 10 days. COVID-19 deaths were identified by the DSHS Emerging and Acute Infectious Disease Unit (DSHS-EAIDU). Decedents were included if COVID-19 was listed as a direct or contributing cause of death on the death certificate. A medical certifier, usually a doctor, determines the cause(s) of death. Decedents who had COVID-19 but died of an unrelated cause were excluded.

Medicaid and CHIP claims and encounters

Texas Medicaid and CHIP provide health coverage for eligible low-income children, families, seniors and people with disabilities. HHSC partners with the Texas Medicaid & Healthcare Partnership (TMHP) to maintain claims and encounter data for services provided to Texans participating in the Medicaid or CHIP programs. From these data, HHSC can identify individuals who received services related to COVID-19 testing or treatment from providers who billed TMHP or the MCOs, as well as examine the impact of COVID-19 on service utilization within the Medicaid population. Data consist of demographic variables, diagnoses, procedures and provider reimbursements. Medicaid and CHIP clients, who are eligible low-income and/or disabled Texans, are one of the vulnerable populations on which the study is focused. The data in the Medicaid & CHIP COVID-19 dashboards and report are limited to paid encounters and claims. Denied claims and encounters are excluded because they can be denied for various reasons, including that incorrect (and thus not actually COVID-related) codes were billed.

County-Level Data

HHSC also identified several resources for county-level information on communities that are most vulnerable. These data measure the prevalence of underlying medical conditions and sociodemographic variables and assess existing disparities that may be exacerbated during the COVID-19 pandemic. The literature shows that many factors can contribute to COVID-19 vulnerability, so data from multiple sources has been incorporated to assess different factors of vulnerability.

CDC Social Vulnerability Index (SVI)– Social vulnerability refers to the resilience of communities when confronted by external stresses on human health, such as natural or human-caused disasters or disease outbreaks such as COVID-19. Socially vulnerable populations include those who have special needs, including but not limited to people without vehicles, people with disabilities, older adults, and people with limited English proficiency. The CDC SVI uses Census data to determine the social vulnerability of every county based on sociodemographic characteristics, housing composition, disability status, minority status & language, housing type and having a personal vehicle available.

County Health Rankings & Roadmaps (CHR)– The CHR program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health. The County Health Rankings use over 30 measures from a variety of sources to compare the health of each county within a state to other counties within the same state. The data consist of two parts, health factors (which focuses on length and quality of life) and health outcomes (which focuses on health behaviors, clinical care, social and economic factors and the physical environment).

Each of the data sources used illustrates part of the impact COVID-19 is having on vulnerable populations in Texas. HHSC gathered and organized the data into a variety of dashboards with visuals allowing people to see an overview of the impact of COVID-19 on Texas' most vulnerable populations.

Throughout Phase 2, HHSC will continue collaborating with key DSHS programs to discover and, where feasible, integrate data from various state agencies, state regulatory boards and other data sources, such as the COVID-19 Community Vulnerability Index (CCVI). The CCVI was designed to capture how resilient communities are to COVID-19.[42] The index expands upon the SVI by adding ten additional measures categorized into two additional themes (see Appendix B). The two themes include epidemiological factors and healthcare system factors. Data come from CDC, Centers for Medicare & Medicaid Services, the Harvard Global Health Institute, PolicyMap, the U.S. Bureau of Labor Statistics, the U.S. Census Bureau, and the Association of Public Health Laboratories. The CCVI can be used for resource planning.

4. Phase 1 Dashboards

A dashboard is a collection of several views, allowing comparison of a variety of data simultaneously. This section discusses each of the Phase 1 dashboards in detail. This section has four subsections: 1) County-level COVID-19 and Vulnerability Measures (one dashboard); 2) COVID-19 Fatalities (one dashboard); 3) Texas Medicaid and CHIP COVID-19 Service Utilization (four dashboards); and 4) Texas Medicaid COVID-19 Demographics (one dashboard). Each subsection starts by describing the data source(s) for that set of dashboards and discussing the purpose of the dashboards. Next, each view in the dashboards is described in detail. Then, important notes and limitations for that dashboard or set of dashboards are discussed. Finally, a bulleted list of brief observations is included to note several overall patterns and trends that can be explored further in later analyses. Note that these observations are preliminary. They are based on visual review of a snapshot of data that was frozen in November[a] and have not been tested for statistical significance. The dashboards, which are updated each month, provide an avenue for HHSC to monitor these trends and detect new patterns as this study moves into Phase 2.

County-level COVID-19 and Vulnerability Measures

The County-level COVID-19 and Vulnerabilities Dashboard contains two maps depicting COVID-19 measures of occurrence juxtaposed with demographic and social characteristics of Texas counties. These characteristics were selected because they are frequently associated with a community's ability to respond to external stresses on human health.

Several publicly available resources, including the CDC SVI, CHR, and data from the Texas DSHS COVID-19 dashboard were used for this dashboard. The CDC SVI uses Census data to determine the social vulnerability of every county based on sociodemographic characteristics. CHR uses over 30 measures from a variety of sources to compare the health of each county within a state to other counties within the same state. DSHS provides COVID-19 case data on public dashboards that are updated daily.[b] Population estimates from the Texas Demographic Center were

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[a] Updates to the dashboards were suspended in November in order to describe them in the report. The most recent data available in each dashboard is dependent on the lag for that data source. Data lags will be described in more detail in other sections of this report.

[b] Data are provisional and subject to change. Probable cases are not included in the cumulative case counts.

used to calculate the number of cases per person in each county. Monthly unemployment statistics are provided by the Texas Workforce Commission (TWC).

Purpose/Use:

- Assess spatial and demographic patterns of social vulnerability in Texas communities to provide insight into which communities are frequently at risk during disease outbreaks and other external stresses on human health.
- Help decision makers identify which counties might need further resources and support during the COVID-19 pandemic. The vulnerability measures on this dashboard do not predict the likelihood of COVID-19 cases for an area. They identify communities with characteristics that historically correlate with poorer health outcomes.
- Visualize COVID-19 occurrence in combination with different aspects of social vulnerability.

Note: The COVID-19 cases data displayed on the County-Level COVID-19 and Vulnerabilities Dashboard should not be used for day-to-day tracking of the pandemic. The dashboard is updated monthly and will not always match the COVID-19 case data on the DSHS COVID-19 Dashboard, which is updated daily.

Views:

County Risk Characteristics

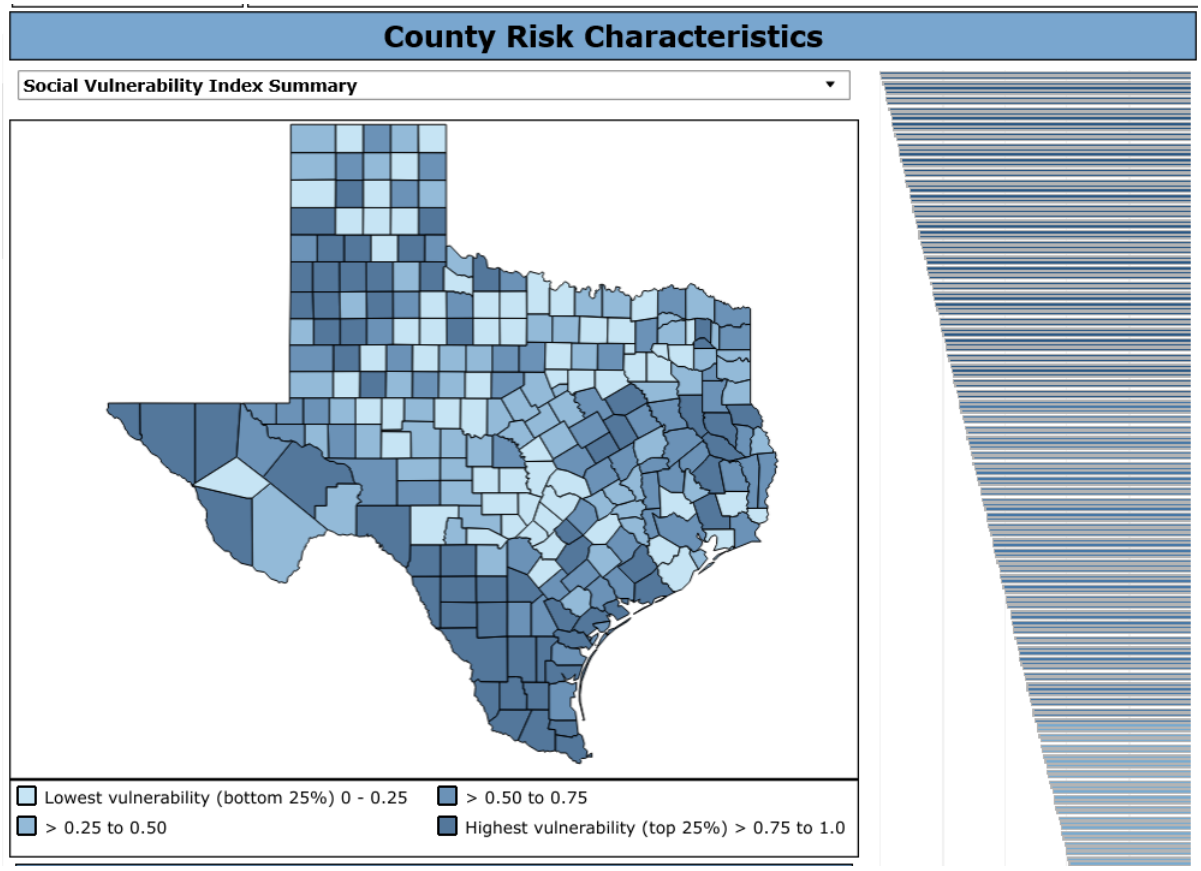
There are 17 different map options in a dropdown menu that represent different aspects of vulnerability (Table 1). For each map, counties are shaded based on quartiles, with darker colors indicating greater vulnerability (Figure 4). Clicking a county on the map or using the county list on the left of the page highlights that county's rank on the sorted bar chart.

Additionally, selected vulnerability measures and the TWC estimate of percent unemployed are listed below the maps to highlight their association with increased risk of COVID-19 morbidity and mortality. Up to three counties can be selected and compared with the statewide rates.

Table 1: County Vulnerability Measures Available as Map Options

Resource	Map Measures
U.S. Census Bureau, 2020 data. Small Area Health Insurance Estimates Program (SAHIE)	• Percent of the population that is uninsured
Texas Demographic Center, 2020	• Percent of the population that is Hispanic • Percent that is Black/African American
CDC Social Vulnerability Index	• Social Vulnerability Index Summary (Percentile)
Socioeconomic Status Theme	• Socioeconomic Status (Percentile) • Population living 200% Below Poverty Level • Population that is unemployed
Household Composition and Disability Theme	• Household Composition and Disability (Percentile) • Population that is a senior citizen (65 Years or More)
Minority Status and Language Theme	• Minority Status and Language (Percentile) • Population that speaks English "less than well"
Housing Type and Transportation Theme	• Housing Type and Transportation (Percentile) • Percent of population that lives in crowded housing • Percent of population with no access to a vehicle
County Health Rankings and Roadmaps	• Prevalence of Adult Diabetes • Prevalence of Adult Obesity • Prevalence of Adults who are Current Smokers/Tobacco Users, and • Primary Care Physician Rate (Per 100,000 population)

Figure 4: County Risk Characteristics Map and Sorted Bar Chart



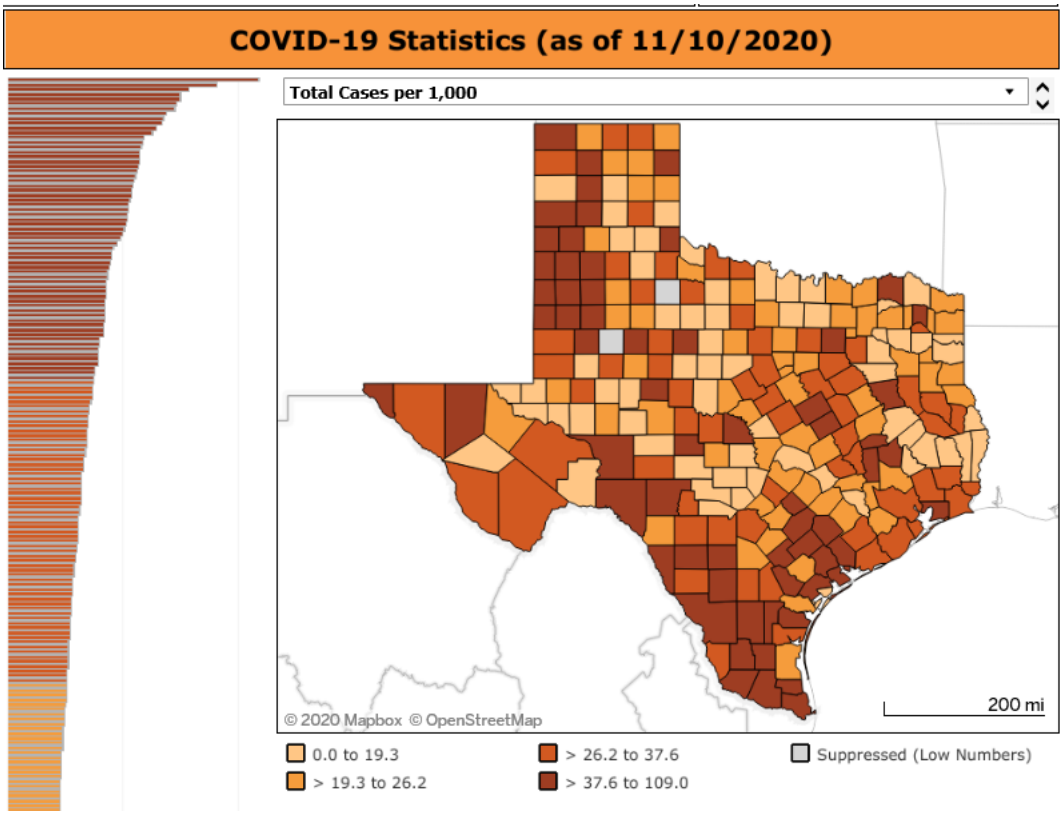
Source: HHSC, County-level COVID-19 and Vulnerability Measures dashboard, retrieved 12/9/2020

COVID-19 Measures of Occurrence

HHSC created similar maps and sorted bar charts to display the occurrence of COVID-19 across Texas (Figure 5). The maps include active cases (per 1,000) and total cases (per 1,000). The source for all COVID-19 data is the DSHS Data Resources Page (https://dshs.texas.gov/coronavirus/AdditionalData.aspx) Excel Tables.

A description of the content and presentation of the data is made in the following paragraphs.

Figure 5: County COVID-19 Statistics Map and Sorted Bar Chart

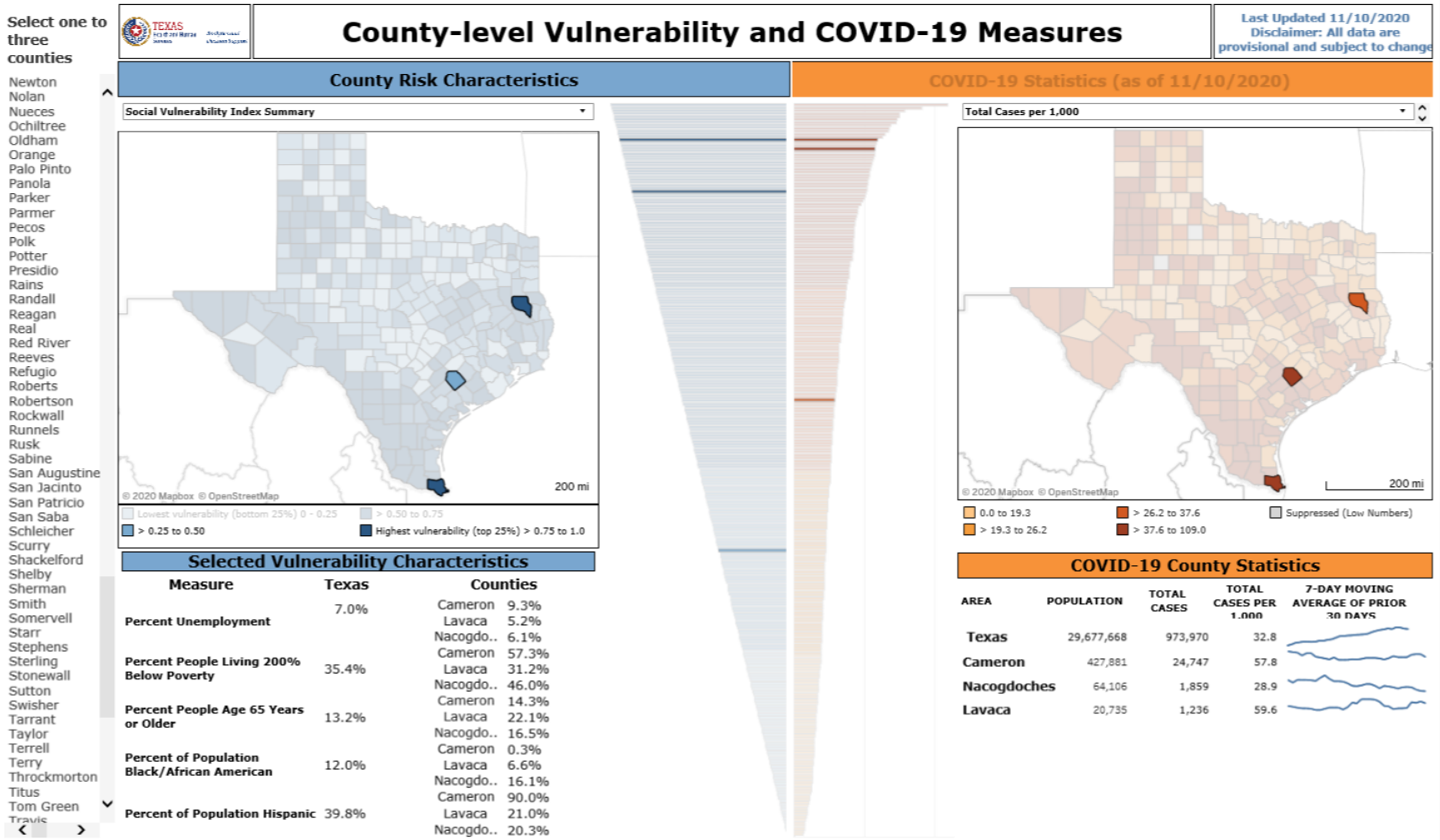


Source: HHSC, [County-level COVID-19 Vulnerability Measures dashboard], retrieved 12/9/2020.

A table below the map lists the total population, total cases (cumulative), and total cases per 1,000 population for each county. Accompanying these statistics there are trendlines of 7-day moving average of daily new cases over the prior 30 days.

Each map allows the user to examine (click on) either the county risk map or the COVID-19 statistics map. Clicking on either map will affect the display for both maps and the sorted bar charts (Figure 6). The user can see the relationships between vulnerability measures and COVID-19 measures by looking at the sorted bar charts in tandem.

Figure 6: Example relationship between Social Vulnerability and Total COVID-19 cases (per 1,000)



Source: HHSC, [County-level COVID-19 Vulnerability Measures dashboard](), retrieved 12/9/2020.

Interpreting the vulnerability measures dashboards:

The SVI summary measure and the four themes that comprise it (see Table 1) rank counties based on percentiles. Percentile ranking values range from 0 to 1, with higher values indicating greater vulnerability. For example, a county with an SVI ranking of 0.75 in the dashboard would indicate that 75% of counties in Texas are less vulnerable than that county (and 25% are more vulnerable).

Including cumulative cases per 1,000 population in the dashboard provides insight into the burden of COVID-19 in each county. Users can observe whether populations with known vulnerabilities are proportionally impacted by COVID-19 by examining the cumulative cases map.

Including active cases per 1,000 population in the dashboard provides information about the current size and spread of COVID-19.[c] Public Health advocates and decision makers can observe active cases to assess what is happening "now" and prepare a targeted response based on the risk characteristics of the county's population.

Observations At-a-Glance

- In Texas, approximately one-third of the counties in the top quartile of SVI are in Texas Public Health Regions (PHR) 8 and 11.[d]
- As of early November 2020, counties in PHR 10 generally had higher numbers of cumulative cases per 1,000 people.
- Some counties in northwest Texas near the Panhandle had higher numbers of cumulative cases per 1,000 people. Many of these counties also have lower rates of primary care physicians (per 100,000 people) and higher levels of social vulnerability according to the SVI.
- Generally, when looking at cumulative cases, the top counties were large urban areas.

The data are subject to the following limitations:

[c] The number of estimated active cases of COVID-19 is defined by Texas DSHS as the number of people with cases of COVID-19 who may still be sick. It is calculated by taking the number of cases and subtracting fatalities and estimated recoveries. The method for estimating recoveries is detailed on the DSHS COVID-19 Dashboard. Beginning December 11, 2020, DSHS changed the methodology for reporting active cases to include probable cases in the calculation of active cases. Figures 4-6 are based on the number of confirmed cases as of November 10, 2020 and are not comparable to more recent updates.

[d] Refer to Appendix C for a map of DSHS Public Health Regions.

- The county-level data from the American Community Survey and County Heath Rankings are generally cross-sectional and drawn from estimates measured before the pandemic.
- COVID-19 data on these dashboards will not be refreshed as frequently as on the DSHS COVID-19 dashboard and consequently may not match the current counts on that dashboard. All provisional data are subject to change.
- County level is not as granular as Census tract level data. The type of social and demographic characteristics examined are not homogenous within a county. County level data were used because COVID-19 case data are not publicly available at Census tract level at this time.

COVID-19 Fatalities

Death certificate information was provided by the DSHS Center for Health Statistics (CHS). While its primary purpose is legal and administrative documentation, death certificate data can also be used for public health surveillance. The data include demographics, information on the primary cause of death, and information on underlying causes of death. While the information is provisional, it is timely, as death certificates must be filed within 10 days of death.

Purpose/Use

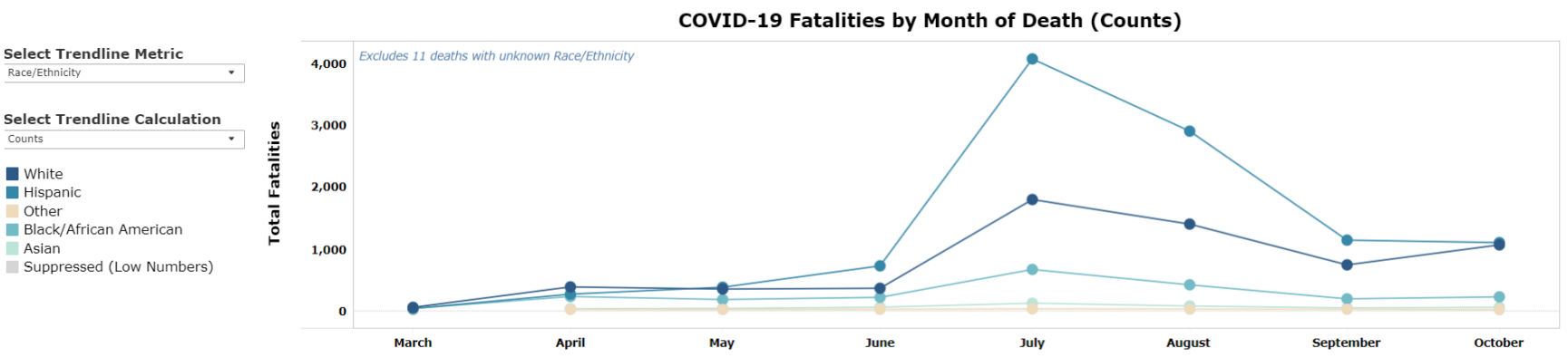
- Compare number and rate of COVID-19 deaths among demographic groups in Texas
- View the number of COVID-19 deaths over time and the distribution of deaths occurring for different demographic groups in Texas

Views

COVID-19 Fatality Trendline by Measure line graphs

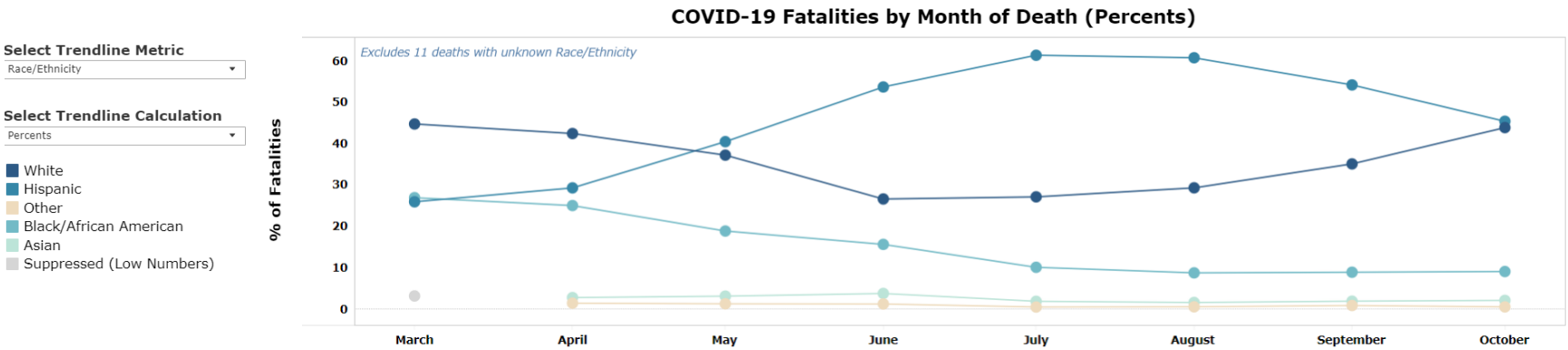
Data for March-September 2020 are currently available in the dashboard. The monthly number of COVID-19 fatalities can be viewed by age group and race/ethnicity. Users can toggle between raw counts and percentages of deaths (Figures 7a and 7b).

Figure 7a: COVID-19 Fatalities, by race/ethnicity and month (Counts)



Source: HHSC, [COVID-19 Fatality Demographics dashboard](), retrieved 12/15/2020.

Figure 7b: COVID-19 Fatalities, by race/ethnicity and month (Percent)

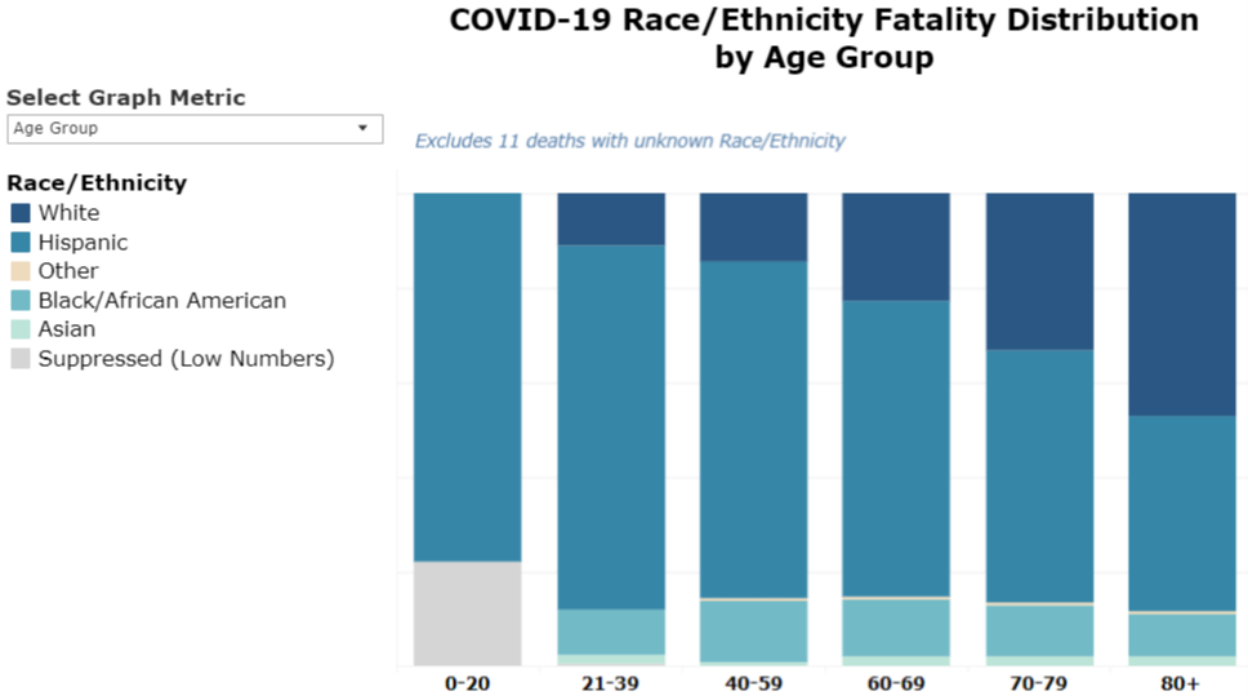


Source: HHSC, [COVID-19 Fatality Demographics dashboard](), retrieved 12/15/2020.

COVID-19 Race/Ethnicity Fatality Distribution bar graphs

The race-ethnicity distributions of COVID-19 fatalities can be viewed by age or gender. For this and other views within this dashboard, fatalities with unknown race/ethnicity are excluded. For groups with a total number of fatalities between 1 and 5, the number of fatalities is suppressed to prevent possible identification of individual clients.

Figure 8: COVID-19 Fatalities by Race/Ethnicity and Age



Source: HHSC, COVID-19 Fatality Demographics dashboard, retrieved 12/15/2020.

COVID-19 Fatalities Rates tables

The table includes the number of deaths, crude death rates, and age-adjusted death rates by race/ethnicity. Using age-adjusted rates allows comparison of COVID-19 death rates among different groups while accounting for the fact that the age distribution among those groups might be very different. A description of the method used for age adjustment can be found on the CHS Vital Statistics website.[e] 2020 Texas population projections are from the Texas Demographic Center.

Interpreting the Fatalities Dashboards

This dashboard uses information collected from death certificates for Texas residents. Deaths for which COVID-19 is listed as a direct cause of death on the

[e] https://www.dshs.state.tx.us/chs/vstat/vs14/ageadj.aspx

death certificate are included. A medical certifier, usually a doctor, determines the cause(s) of death. DSHS does not include deaths of people who had COVID-19 but died of an unrelated cause.

The data on the COVID-19 Fatalities dashboard are updated monthly and will not always match the COVID-19 death data on the DSHS COVID-19 Dashboard, which are updated daily. Delays and differences in reporting may also lead to discrepancies in COVID-19 death counts when compared to dashboards from other entities such as local health departments, universities, medical centers, etc.

The data are subject to the following limitations:

Death certificate data are currently provisional. More data may be coming in to complete the data set, and DSHS and others have not completed quality checks of the information. Provisional data become final once the data set is complete and quality checks are finished. That process often takes several months. As such, the data presented here should be interpreted with caution.

Observations At-a-Glance

- Over 19,000 COVID-19 deaths occurred from March through the end of October. The highest number of COVID-19 deaths occurred in July.
- More COVID-19 deaths occurred among males than females (58% versus 42%).
- 80+ year-olds were most affected by COVID-19 deaths compared to the other age groups analyzed (i.e., 0-20, 21-39, 40-59, 60-69, 70-79 years). They comprised around 33% of all COVID-19 deaths from March through October. The next highest age group affected was 70-79-year-olds (who made up approximately 25% of the COVID-19 deaths).
- Hispanics comprise approximately 40% of the Texas population (according to the Texas Demographic Center); they experienced almost 58% of COVID-19 deaths.
- Almost half of the 80+ year-olds with a COVID-19 related death were White (n = 2,991 or 47%). Hispanics were most impacted in the other age groups. For 0-20-year-olds, Hispanics accounted for approximately 78% of the 36 deaths due to COVID-19.
- The highest crude and age-adjusted death rates per 100,000 for COVID-19 were among Hispanics (crude: 89.6 and age-adjusted: 133.9), followed by Black/African Americans (crude: 58.9 and age-adjusted: 72.9).
- During the early months of the pandemic (March and April), White non-Hispanic Texans had the highest percentage of fatalities (approximately 45%). In May, White and Hispanic Texans each had an equal percentage of

fatalities (around 38%). By June, most of the deaths were among Hispanics. After that point, the percentage of fatalities among White non-Hispanic Texans and Hispanic Texans steadily converged until they again had an almost equal percentage of fatalities (45% for Hispanic and 44% for White) as of the end of October.

Texas Medicaid and CHIP COVID-19 Service Utilization

The data source for the Medicaid and CHIP dashboards is claims and encounters, as well as enrollment information, drawn from HHSC's Analytics Data Store (ADS) and the 24-month Medicaid and CHIP enrollment file. The ADS database is a 'Best Picture' view of the claim and encounter data, meaning that it contains the most current version of a transaction. HHSC partners with TMHP to maintain claims and encounters data for services provided to Texans participating in the Medicaid or CHIP programs. From these data, HHSC can identify individuals who received services related to COVID-19 testing and treatment and examine the impact of COVID-19 on service utilization within the Medicaid population.

Purpose/Use:

- Identify populations within Medicaid and CHIP most often impacted (using counts) and/or disproportionately impacted (using rates) by COVID-19.
- Estimate cost impact of COVID-19 on the Medicaid and CHIP programs (using paid amounts).
- Inform resource decisions, such as where to provide more outreach or other services to reach various populations.

The following four dashboards are organized similarly:

1. Texas Medicaid & CHIP Clients Diagnosed with COVID-19
2. Texas Medicaid & CHIP Clients Tested for COVID-19
3. Texas Medicaid & CHIP COVID-19 Emergency Department Visits
4. Texas Medicaid & CHIP COVID-19 Hospitalizations

Measures include client counts and rates per 10,000 clients. The dashboards allow the data to be filtered by program, DSHS Health Service Region, county, race/ethnicity, gender, and age group.

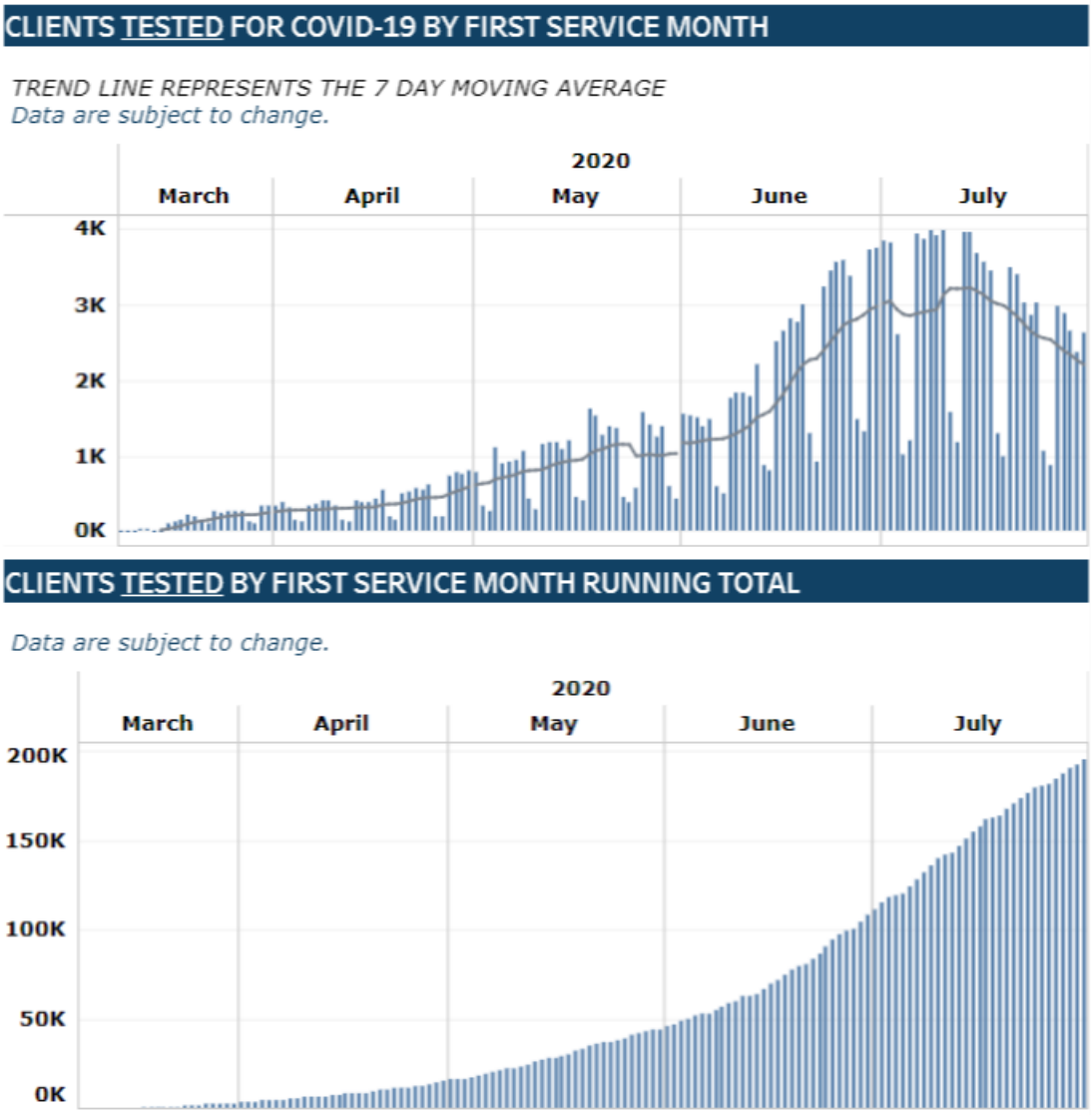
Views

Banner Display and Trend Charts

Information at the top of each dashboard shows the number of clients and amount paid for that type of service. For example, for the dashboard on COVID-19 testing, the information included is the number of Texas Medicaid and CHIP clients tested for COVID-19 and the amount paid for Medicaid and CHIP COVID-19 testing. The testing dashboard includes an additional table breaking out the type of test received by molecular, antibody, and antigen.

Two trend charts are displayed (Figure 9). The bars on the top chart present the number of unique clients who received a COVID-19-related service each day. The trend line represents a seven-day moving average which smooths out expected daily differences, such as the relative lower numbers of clients who received services on weekends versus weekdays. The bottom trend chart shows the cumulative number of unique clients who received a COVID-19-related service. In both charts, the client is counted by the first time he or she received a service. For example, if a client received one test on March 20 and a second test on April 18, he or she would be captured in the top chart on March 20 and in the bottom chart on March 20 and every day thereafter.

Figure 9: Number of Medicaid and CHIP Clients with COVID-19 Tests, Daily Counts and Running Totals, March – July 2020



Source: HHSC, COVID-19 Medicaid & CHIP Testing Dashboard, retrieved 12/4/2020.

Bar graphs

The bar graphs show clients by 1) program; 2) race/ethnicity and 3) age group and gender (Figure 10).

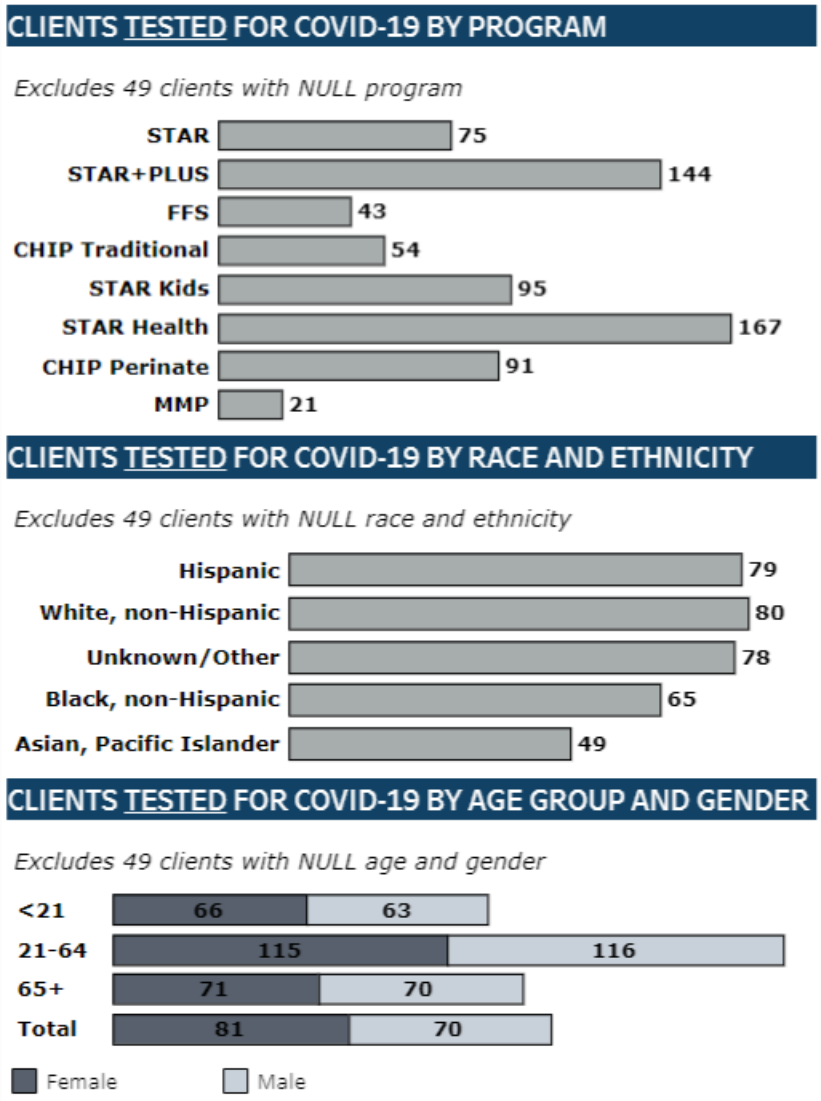
The type of program the client is enrolled in is, to some extent, an indication of possible vulnerabilities to COVID-19. STAR+PLUS primarily serves adults with a disability and people who are age 65 and older (including those dually eligible for Medicare and Medicaid), as well as women with breast or cervical cancer. STAR+PLUS also includes a large number of nursing home residents. STAR Health serves children in state conservatorship and young adults currently or previously in

foster care. STAR Kids serves children and adults age 20 and younger with a disability. CHIP serves children and unborn children (CHIP Perinatal) in families that do not meet the financial or other qualifications for Medicaid but cannot afford to buy private health insurance. STAR serves children, newborns, pregnant women, and some families and children. Nursing facility (NF) residents who are participants in the Texas Dual Eligible Integrated Care Demonstration Project (known as the Dual Demonstration) receive their Medicaid and Medicare services through one Medicare-Medicaid Plan (MMP) plan, including NF services. More details about Texas Medicaid and CHIP programs are available in the Texas Medicaid and CHIP Reference Guide.[f]

Data on race and ethnicity are collected from Medicaid/CHIP clients when they enroll in the programs. The category "Unknown/Other" indicates that the corresponding demographic fell into a category too small to present on its own or the data element was missing for that client in the enrollment data. "NULL" indicates that no enrollment data were available for the client during the month he or she received the service. Clients with "NULL" race and ethnicity are excluded from this view.

[f] https://hhs.texas.gov/services/health/medicaid-chip/about-medicaid-chip/reference-guide

Figure 10: Number of Medicaid and CHIP Clients with COVID-19 Tests,* By Program Type, Race/Ethnicity, Age Group, and Gender, March – July 2020



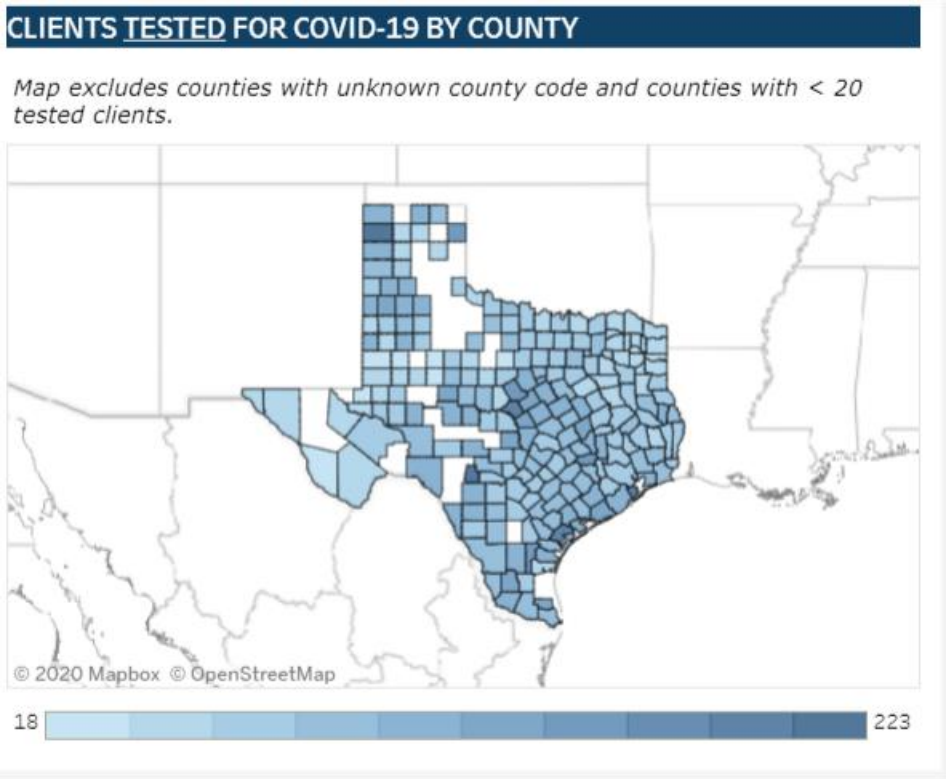
Source: HHSC, Medicaid & CHIP COVID-19 Testing dashboard, retrieved 12/4/2020.

*Note: Includes only tests or services that were paid through the Medicaid or CHIP programs

Map

The map displays the number or rate of clients impacted by COVID-19 by county (Figure 11). Color shades provide a quick estimate of the counts or rates. The user may hover over the county to find an exact number or rate in the pop-up tool tip. Results are suppressed for counties with <20 clients with COVID-19-related services to prevent potential identification of individuals. Clients with an unknown county are not included in this visualization.

Figure 11: Medicaid and CHIP Clients with COVID-19 Tests,* By County, March – July 2020



Source: HHSC, Medicaid & CHIP COVID-19 Testing dashboard, retrieved 12/4/2020.

*Note: Includes only tests or services that were paid through the Medicaid or CHIP programs

Interpreting the Medicaid COVID-19 Utilization Dashboards

The utilization data in the dashboards are based on Medicaid and CHIP claims and encounters. These are based on payments that Medicaid/CHIP providers have received for services they have provided. Claims and encounters provide a record of interactions between clients and health care providers and include information such as dates of service, diagnoses, procedures, amount paid and provider identifications. The dates of service on the claims were used to create the trend lines by month. Diagnosis and procedure codes were used to identify clients diagnosed with and tested for COVID-19. For more information on the specific codes used, users can refer to the notes on the utilization dashboards' web pages. Client demographics and geographic location were pulled from the Medicaid and CHIP client enrollment files and the information may differ from what was submitted on the claim or encounter. The data in the emergency department and hospitalizations dashboards are subsets of the data in the diagnosis dashboard (which includes all services provided).

Because the relative size of different client groups varies so widely, examining rates per 10,000 clients, rather than counts, is important when comparing the frequency

of services between groups. For example, STAR program enrollment comprises around 3.5 million clients a month, while STAR Health enrollment comprises around 38,000. Calculating rates allow the reader to make more meaningful comparisons of clients receiving COVID-19-related services across Medicaid and CHIP programs.

The data are subject to the following limitations:

- The testing data are based on paid Medicaid or CHIP claims that indicate that a test has been performed. However, the claims do not include the results of the test, so the positivity rate cannot be calculated.
- Data on the Medicaid and CHIP dashboards are limited to claims and encounters for tests and services billed through these programs. Therefore, the dashboards do not capture information on tests or services potentially received outside of the programs.
- **Diagnosis and test counts cannot be combined to calculate a positivity rate.** Some clients receive services outside of the Medicaid program. Likewise, someone might be tested outside the program and then receive a service within Medicaid. Additionally, clients who test positive may not receive subsequent services with a diagnosis of COVID (for instance, if they are not ill enough to need follow-up care.
- Data are preliminary. An 8-month lag following the date of service is generally standard before encounters can be considered complete. At the time of this report, the most recent month *of relatively complete* data available is July. The dashboards will be refreshed monthly with a three-month lag.
- Enrollment data used for denominators in rates are also preliminary because enrollment data is not considered final for eight months due to adjustments. Sometimes clients are retroactively enrolled in Medicaid.
- Only claims and encounters with a diagnosis code of U07.1 (2019-nCoV acute respiratory disease) in any diagnosis field were included in the dashboard.

Observations At-a-Glance

- Between March 2020 and July 2020, 194,905 Medicaid and CHIP clients were tested for COVID-19. During this same period, 51,120 clients received a service with a COVID-19 diagnosis. **Note that diagnosis and test counts cannot be used to calculate a positivity rate.** Some clients receive tests or services outside of the Medicaid program so the calculation would not be accurate.
- As of July, the Medicaid and CHIP programs spent $15.6 million on COVID-19 testing and $108.9 million to provide services to clients diagnosed with COVID-19.

Note that the remainder of these observations will compare rates as opposed to counts of clients to more meaningfully compare groups of different sizes.

- Individuals in STAR+PLUS and STAR Health were more likely to be tested for COVID-19 (144 and 167 per 10,000 clients, respectively) than individuals in other Medicaid programs (95 or less per 10,000 clients).
- Individuals in STAR+PLUS were more likely to be diagnosed with COVID-19 (56 per 10,000 clients) than individuals in other programs (40 or less per 10,000 clients) and are more likely to receive services during an emergency department (ED) visit or an inpatient hospitalization.
- Hispanic clients and White non-Hispanic clients were more likely to be tested for COVID-19 (79 and 80 per 10,000 clients, respectively) than Black/African American non-Hispanic (65 per 10,000 clients) and Asian Pacific Islander clients (49 per 10,000 clients).
- Hispanic clients were more likely to receive a service with a COVID-19 diagnosis (24 per 10,000 clients) than clients of other races/ethnicities (17 or less per 10,000 clients). This is also true for ED visits and inpatient hospitalizations.
- Individuals 21-64 years of age were more likely to be tested for COVID-19 (231 per 10,000 clients).
- Individuals 65 years of age and older were more likely to receive any service with a COVID-19 diagnosis (84 per 10,000 clients) and be hospitalized with a COVID-19 diagnosis (27 per 10,000 clients).
- Female clients were more likely to be tested and diagnosed with COVID-19 for any service, including in the ED or for inpatient hospitalizations.
- The number of COVID-19 tests and diagnoses were low in March 2020 and April 2020. COVID-19 tests started increasing in May 2020 and COVID-19 diagnoses started increasing in June 2020.
- Ninety-three percent of all tests were molecular[g]; the remainder were antibody or antigen tests.
- The rates of COVID-19 testing and diagnosis were higher in the eastern and southern regions of the state than in the western and northern regions.

[g] Molecular tests diagnose current infections by looking for a germ's genetic material. For COVID-19, molecular tests include nucleic acid amplification tests (NAAT), reverse transcription polymerase chain reaction (RT-PCR) tests and loop mediated isothermic amplification (LAMP) tests. A positive molecular test is required to meet criteria as a confirmed case. The procedure codes identifying molecular tests in the Medicaid & CHIP claims & encounters data include U0001, U0002, 87635, U0003, U0004, 0223U, 0202U, 0225U, 0226U, 87636, and 87637.

Texas Medicaid COVID-19 Demographics

The Texas Medicaid population as a whole is one of the vulnerable populations being examined, but specific programs focused on specific groups can be examined using the dashboards. For example, the Texas Dual Demonstration program is for clients who are mostly age 65 or older and/or have a disability and receive Medicare services through their Medicaid plan (called Medicare-Medicaid Plan or MMP) and the STAR+PLUS program includes clients with disabilities, clients over age 65, and clients who receive Medicare services through a Medicare plan.

Purpose/Use:

- Expand on utilization dashboards by providing more options for examining demographic information for Medicaid and CHIP clients impacted by COVID-19.
- Compare numbers and rates of clients impacted by COVID-19 among different demographic groups in the Medicaid and CHIP programs over time.

Views

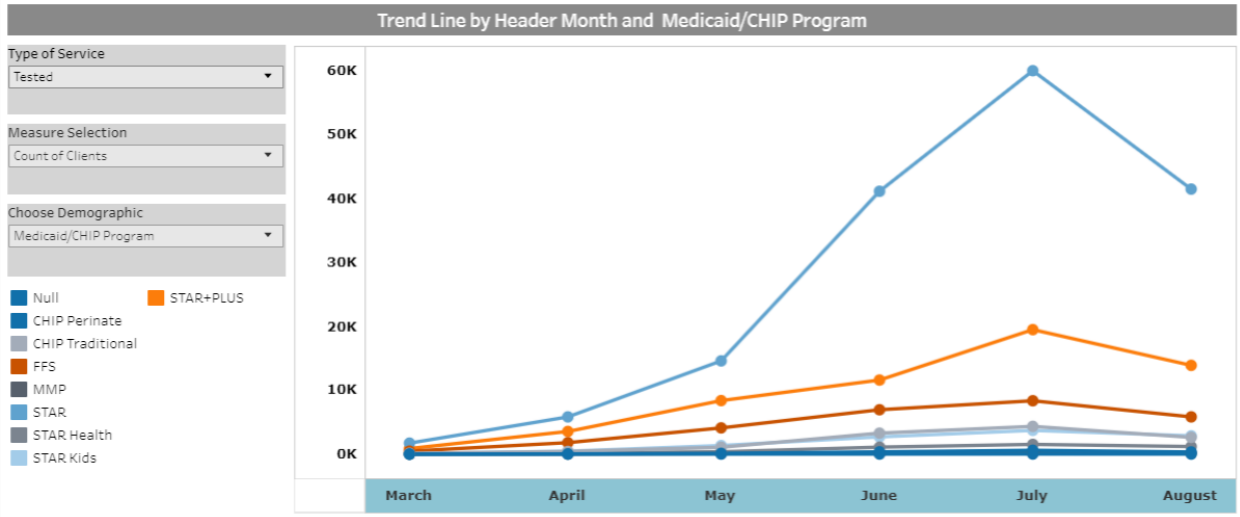
Trend Line by Header Month and Medicaid/CHIP Program

The line graph displays: 1) clients who have been tested for COVID-19; 2) clients who have been diagnosed with COVID-19; 3) clients who had a COVID-19 related hospitalization; and 4) clients who had a COVID-19 related emergency department visit. The measures included are client counts and the rates per 10,000 clients, based on paid claims and encounters. The month the service was received is always presented on the x-axis and the demographic options for the y-axis are Medicaid/CHIP program, race/ethnicity, age group, gender and DSHS Service Region. As with the utilization dashboards, the denominator used in the rates is enrollment data.

Heat Map

The heat map displays counts/rates of clients who have been tested for COVID-19 or who have been diagnosed with COVID-19 for any service, an ED visit, or an inpatient hospitalization. The measures included are client counts and the rates per 10,000 clients. Race/ethnicity categories are always presented on the y-axis (rows), and the demographic options for the x-axis (columns) are Medicaid/CHIP program, age group, gender and DSHS Health Service Region. The highest rates or counts are a darker shade of blue than lower rates or counts. As with the utilization dashboards, the denominator used in the rates is Texas Medicaid and CHIP enrollment data.

Figure 12: Number of Medicaid and CHIP COVID-19 by Demographics, March – July 2020



Heat Map by Medicaid/CHIP Program and Race/Ethnicity

Type of Service: Tested
Measure Selection: Count of Clients
Choose Demographic: Medicaid/CHIP Program

	CHIP Perinate	CHIP Traditional	FFS	MMP	STAR	STAR Health	STAR Kids	STAR+PLUS
Asian, Pacific Islander	24	199	326	7	1,560	12	39	901
Black, non-Hispanic	33	942	3,910	62	17,400	924	745	7,973
Hispanic	1,218	6,584	11,268	318	86,150	1,672	4,985	16,246
Unknown/Other	112	1,778	2,741	77	23,495	113	3,564	9,066
White, non-Hispanic	38	1,671	6,139	54	22,915	1,140	601	13,759

Source: HHSC, Medicaid & CHIP COVID-19 Demographics dashboard, retrieved 12/7/2020.

Interpreting the Medicaid COVID-19 Demographics Dashboards

Medicaid clients are not a homogenous group. Socioeconomic status varies among clients, though detailed socioeconomic data is unavailable beyond the known Federal Poverty Limits of the Medicaid program. More details about income eligibility for the Texas Medicaid and CHIP programs are available in the Texas Medicaid and CHIP Reference Guide (see footnote on Page 27). Children make up a large percentage of clients and are generally healthy. Other vulnerable populations in Medicaid include clients with disabilities and clients over 65.

The data are subject to the following limitations:

- As with the utilization dashboard, data are preliminary. At the time of this report, the most recent month of complete data available is July. The dashboards will be refreshed monthly with a three-month lag.

- The data in the Medicaid & CHIP COVID-19 dashboards are limited to paid Medicaid and CHIP encounters and claims. Clients who receive services where the provider did not bill or who received services outside of Medicaid and CHIP are not included.
- Enrollment data used for denominators in rates are also preliminary because enrollment data is not considered final for 8 months due to adjustments. Sometimes clients are retroactively enrolled in Medicaid and expenses are covered prior to their month of application.

Observations At-a-Glance

- In the early months of the pandemic, STAR+PLUS had the highest count of diagnosed clients. As the pandemic spread, STAR became the program with the highest count of diagnosed as well as tested clients. Note that STAR is the biggest program and when looking at client counts, it will overshadow other programs. For that reason, the remainder of these observations will compare rates as opposed to counts of clients.
- STAR+PLUS has had the highest diagnosis rate per 10,000 clients each month through July. STAR+PLUS also had the highest testing rate until June, after which STAR Health had the highest rate.
- White non-Hispanic clients had the highest diagnosis rate per 10,000 clients until June, after which Hispanic clients did.
- As of July, Region 11 has emerged with the highest testing (242.7 per 10,000 clients), diagnosis (135.5 per 10,000 clients) and hospitalization (17.77 per 10,000 clients) rates. Region 11 and 8 had about equally high emergency department visit rates (21.07 and 20.90 per 10,000 clients, respectively).
- The heat map shows that Hispanic and White non-Hispanic STAR+PLUS (89 and 88 per 10,000 clients, respectively) and White non-Hispanic MMP clients had the highest diagnosis rates (75 per 10,000 clients). STAR Health had the highest testing rates.
- Across all race/ethnicities, clients 21-64 years old were more likely than younger or older clients to be tested.

Upcoming dashboards:

Applications for State Benefits

HHSC is planning a dashboard that uses data that is gathered when people apply for public benefit programs. These dashboards can be used to assess the collateral impact of COVID-19 on working families. Benefit programs include Medicaid, CHIP, Healthy Texas Women (HTW), HTW Plus, SNAP, and Temporary Assistance for Needy Families (TANF).

Concurrently, HHSC is using TWC data to identify individuals who applied for public assistance with HHSC and indicated they had been laid off or had their work hours reduced.

HHSC has looked at the pre-COVID-19 period of January – March 17, 2020, as the baseline, and subsequently from the beginning of Texas' COVID-19 response (beginning March 18 and forward). Several challenges have been identified and are listed below.

- Associating TWC data with HHSC applications is complex. Some clients experience both a reduction in work hours and a loss of employment, and these time frames can overlap, making it difficult to determine which event was associated with their application for HHSC benefits.
- The data do not allow for differentiation among employers. The reduction in hours and/or loss of employment data for an individual may be for the same job or may be for different jobs. Also, individuals with a reduction of hours in the early months of the study period may show up again with a termination in later months of the year.
- Because the HHSC eligibility process uses a universal application, individuals can be found eligible/approved during the interview process for a program for which they did not initially apply.
- With some Medicaid applications, applicants are potentially eligible for up to 3 prior months of eligibility from their file date, if they have unpaid medical bills. Each prior month of eligibility will result in a separate approval from the initial file month, resulting in an inflated count.
- Individuals may apply for more than one program on the universal application. The impact on program application and approval counts, plus demographic reporting, is that the individual will be counted in each program
- The TWC data include only those individuals who filed for unemployment benefits due to reduced hours or loss of employment. If an applicant for public assistance had reduced work hours or lost their job but did not file for unemployment with TWC, they are not included in the data.

HHSC is determining the best approach for addressing these challenges. Potential solutions include:

- Reporting that an individual applied and was approved for a service, regardless of program type or number of programs.
- Collapsing the reduced hours and loss of employment into a single category when reporting.

Impact of COVID-19 on Medicaid and CHIP Service Utilization

HHSC creates and maintains a library of internal dashboards displaying Medicaid and CHIP healthcare utilization by key service types. The dashboards are designed to detect trends and variations in service utilization and cost patterns to help inform program and policy decisions. Measures include monthly utilization rates per 1,000 members and average amount paid per client per month. Various filters are available to allow the user to drill down by Medicaid and CHIP program types (FFS, STAR, STAR+PLUS, STAR Kids, STAR Health, MMP, and CHIP), managed care organizations, and service delivery areas. The dashboards are updated quarterly to reflect the most recent final data available, which requires an eight-month lag due to retroactivity in the managed care encounters.

HHSC is leveraging these dashboards to create a new dashboard to study the impact of COVID-19 on service utilization levels, focusing on comparing utilization rates over time across various groups of clients. The new dashboard will add: 1) more recent, preliminary data to provide more timely feedback on service utilization changes during the pandemic; 2) demographic data, including gender, age, and race/ethnicity; and 3) county-level breakouts. Initially, the dashboard will focus on the following key services: emergency department visits, inpatient stays, telemedicine, and well child visits. Modifying the existing dashboards requires considerable development time because new data sources must be incorporated.

5. Discussion

Phase 1 has focused on information gathering and the creation of analytic dashboards to examine descriptive patterns and trends among different groups of vulnerable Texans. Whereas many COVID-19 dashboards can be used for daily tracking and pandemic response, these dashboards are meant to provide a foundation: a reference point for researchers investigating to what degree COVID-19 has affected certain populations. As Texas continues to respond to the pandemic, and as new treatments and preventive measures are discovered, the influence of socio-economic and demographic characteristics on clinical health outcomes can and should be monitored.

The "Observations At-a-Glance" listed in the previous section are based on visual review of the dashboards. They represent a snapshot of data from November and have not been tested for statistical significance. Many of the observations have been seen in other states or countries and are supported in peer-reviewed literature. It is important for Texas to determine the magnitude of the impact of COVID-19 on vulnerable populations. This will involve applying epidemiological principles to do more detailed analyses. In Phase 2, HHSC will conduct several studies which will involve measuring statistical associations, formulating hypotheses for the observed associations, and systematically determining whether the risk for COVID-19 morbidity and mortality is different for individuals with vulnerable risk characteristics. The Phase 2 studies will explore the role and interrelationship between various socio-demographic characteristics and COVID-19 occurrence.

From a clinical standpoint, COVID-19 outcomes may be driven by preexisting health status. Historically, health status has been affected by socioeconomic status or geographic area. The studies in Phase 2 will examine the association between these risk characteristics and COVID-19 morbidity and mortality. Future studies may include analyzing data on comorbidities and illness severity. One source for this data could be Texas Medicaid and CHIP claims and encounters, which include information on procedures and secondary diagnoses for patients who receive services for COVID-19 treatment. Additionally, death certificates report important diseases or conditions that contributed to death but were not part of the underlying cause of death.[43]

Examining which underlying medical conditions and other risk factors are associated with adverse COVID-19 outcomes could provide more insight into which communities are most vulnerable to COVID-19 and who is at higher risk of more severe symptoms and/or serious complications.

These studies will build upon the groundwork from Phase 1. HHSC will solicit feedback from stakeholders and continue to seek direction from the CREG. Recommendations to public health leaders, and the Texas Legislature will be based on both the descriptive and inferential analyses performed.

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List of Acronyms

Acronym	Full Name
ALP	American Life Panel
CDC	Centers for Disease Control and Prevention
CHIP	Children's Health Insurance Program
CHR	County Health Rankings & Roadmaps
CHS	Center for Health Statistics
CLIMB	COVID-19 and Life Stressors Impact on Mental Health and Well-being
CSTE	Council of State and Territorial Epidemiologists
CSV	Comma separated value
DSHS	Department of State Health Services
DSHS-EAIDU	DSHS Emerging and Acute Infections Disease Unit
ECR	Electronic case reporting
ELR	Electronic Lab Records
HHSC	Health and Human Services Commission
HL7	Health Level 7 International
HTW	Healthy Texas Women
MMP	Medicare-Medicaid Plan
NEDSS	National Electronic Disease Surveillance System
NHANES	National Health and Nutrition Examination Survey
PHR	Public Health Regions
SVI	Social Vulnerability Index
TANF	Temporary Assistance for Needy Families
TMHP	Texas Medicaid & Healthcare Partnership
TWC	Texas Workforce Commission
VSS	Vital Statistics Section

Appendix A.

What is NEDSS?

National Electronic Disease Surveillance System (NEDSS) is the premier integrated infectious disease surveillance system built, developed, and maintained by the Centers for Disease Control and Prevention (CDC). It is offered free of cost and utilized in 26 states and territories including Texas. Texas National Electronic Disease Surveillance System (NEDSS) is the primary disease surveillance system utilized by public health epidemiologists at the local and state level across Texas to monitor and respond to most notifiable infectious disease conditions. Approximately 90 disease conditions are monitored and investigated in NEDSS.

Electronic Laboratory Reports (ELRs) and Laboratory Onboarding

Since 2004, NEDSS has played a critical role in preventing further transmission of infectious diseases in Texas primarily through the rapid processing and distribution of ELRs for notifiable conditions. Laboratories, hospitals, clinics and other performing lab facilities are required to report ELRs to NEDSS within 24 hours of the resulting of tests. Prior to COVID-19, NEDSS was only able to accept ELRs that were adherent to the rigorous Health Level 7 International (HL7) standards. An alternative method for reporting ELRs was needed because many new lab facilities were unable to report via HL7. DSHS developed a comma separated value (CSV) formatted file for those facilities. While the CSV format helped to facilitate transmission from facilities, it also increased the propensity for receiving incomplete and erroneous data from submitters. DSHS has developed a comprehensive method for validation utilizing an advanced integration engine along with a validation team of specialized epidemiologists to review and consult with labs on errors and corrections needed.

Since COVID-19, average daily ELR production has increased by over 5000%. As of December 1, 2020, NEDSS has processed and distributed over 11 million COVID-19 ELRs. Additionally, the number of lab facilities registered with NEDSS increased by over 4000%. NEDSS went from approximately 70 labs registered prior to COVID-19 to over 3000 labs registered.

Infectious Disease Case Investigations

As incoming ELRs are processed into NEDSS, they are assigned to the appropriate local health jurisdiction in Texas based on the patient's home address. That processed ELR is then placed in the local health jurisdictions queue for review. ELRs are the primary trigger for public health disease investigations. The patient is

interviewed, screened for prophylaxis if appropriate, and close contact information is assessed. Close contacts are then interviewed where appropriate. The primary goal of the disease investigation is to halt disease transmission. Public health epidemiologists adhere to the Emerging and Acute Infectious Disease Investigation Guidelines that are specific to each disease condition and are based on CDC, Council for State and Territorial Epidemiologists (CSTE), and Red Book guidelines.

NEDSS provides an extremely valuable utility in the ability to provide unique permission sets to each local jurisdiction along with distinct user permissions based on a defined users role. NEDSS users have the ability to enter their own data, analyze their own data, and reconcile differences in data with DSHS at the end of each year. As local user's complete investigations, they submit cases to DSHS central office for validation and approval prior to sending to CDC. This process preserves a high data quality, validity, and integrity within the system.

What is Local Home Rule?

Texas is a home rule state, meaning that local rule takes precedence over any other higher level of government. Accordingly, local health departments have public health authority over their defined jurisdictions. In Texas many local health departments cover either a city or a county and sometimes cover both. NEDSS mirrors this home rule concept in its jurisdictional assignment of ELRs. Areas not covered by a local health authority are assigned to the appropriate DSHS region for follow up.

NEDSS has an assignment algorithm that routes ELRs to the appropriate local jurisdiction based on patient residence. There are times when a patient address is not available or lacks key information and the jurisdiction initially assigned is incorrect and should be transferred. In these instances, NEDSS offers the perfect platform to easily facilitate the secure transfer of that data to the proper jurisdiction. Prior to NEDSS, many local authorities would fax cases when needing to transfer. The receiving jurisdiction would then need to reenter the investigation.

What are the overall benefits of NEDSS?

NEDSS provides a comprehensive integrated surveillance solution to what was previously a fragmented statewide system where data delays and gaps were a common occurrence. Prior to NEDSS all local health jurisdictions and regions managed their own surveillance systems and submitted investigation data only when completed. NEDSS was created to ensure a mechanism to detect and rapidly respond to public health threats early was in place. NEDSS also reduced overall costs associated with supporting multiple systems; ultimately improving overall efficiency and reducing cost to tax payers.

NEDSS now provides near real-time data and the ability to quickly exchange data on a standardized platform that meets CDC requirements for reporting. NEDSS processes and delivers ELRs to more than 50 local health jurisdictions across the state for approximately 90 infectious disease conditions that pose a threat to public health safety.

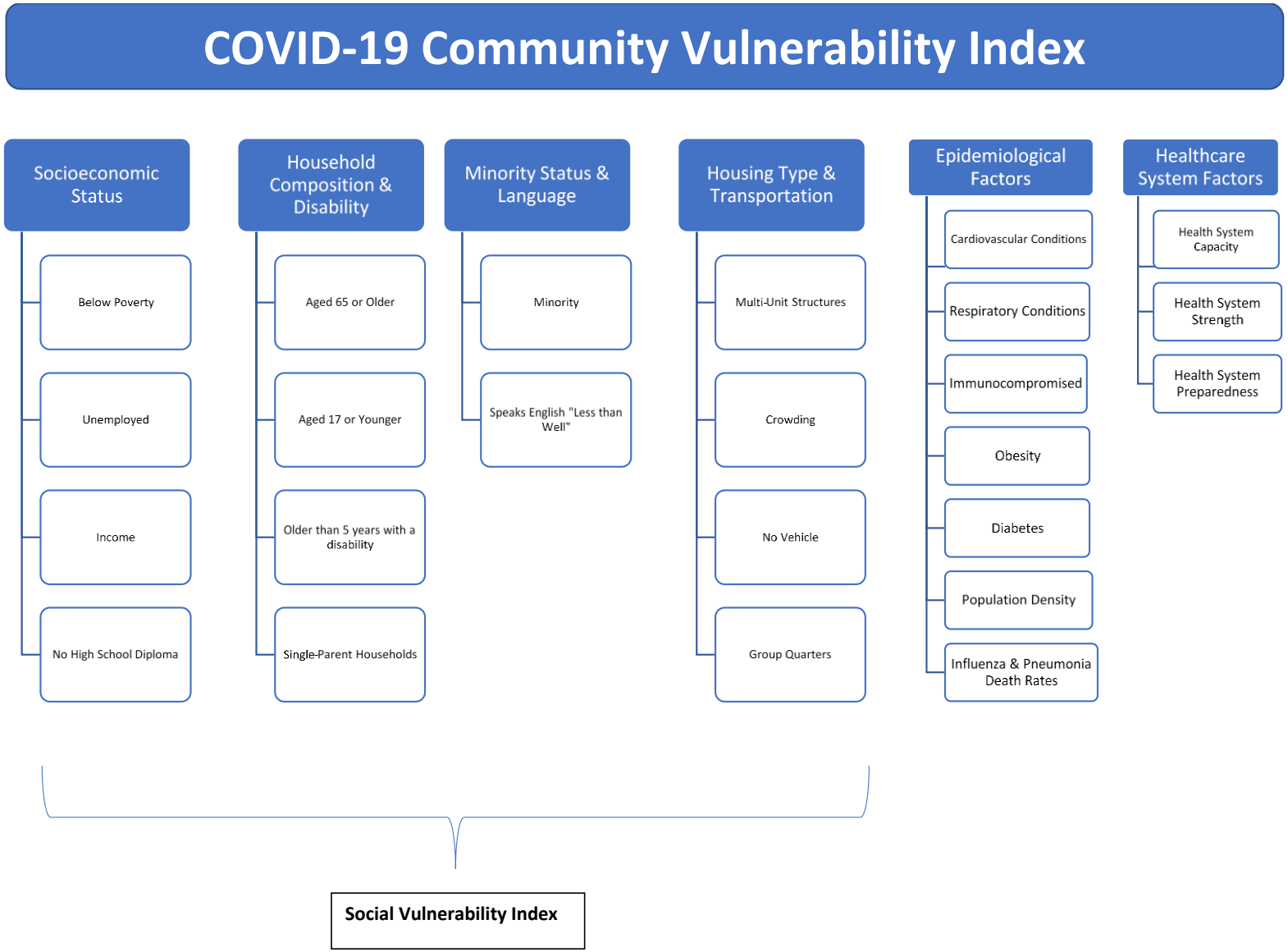
NEDSS surveillance data is utilized in the following ways:

- Detect and respond to early public health threats,
- Ensure appropriate interventions such as treatment are implemented,
- Prevent further transmission of illness,
- Identify and address pockets of need,
- Provide data to guide intervention strategies,
- Provide data to help guide policy and funding decisions, and
- Evaluate the effectiveness of program interventions and design.

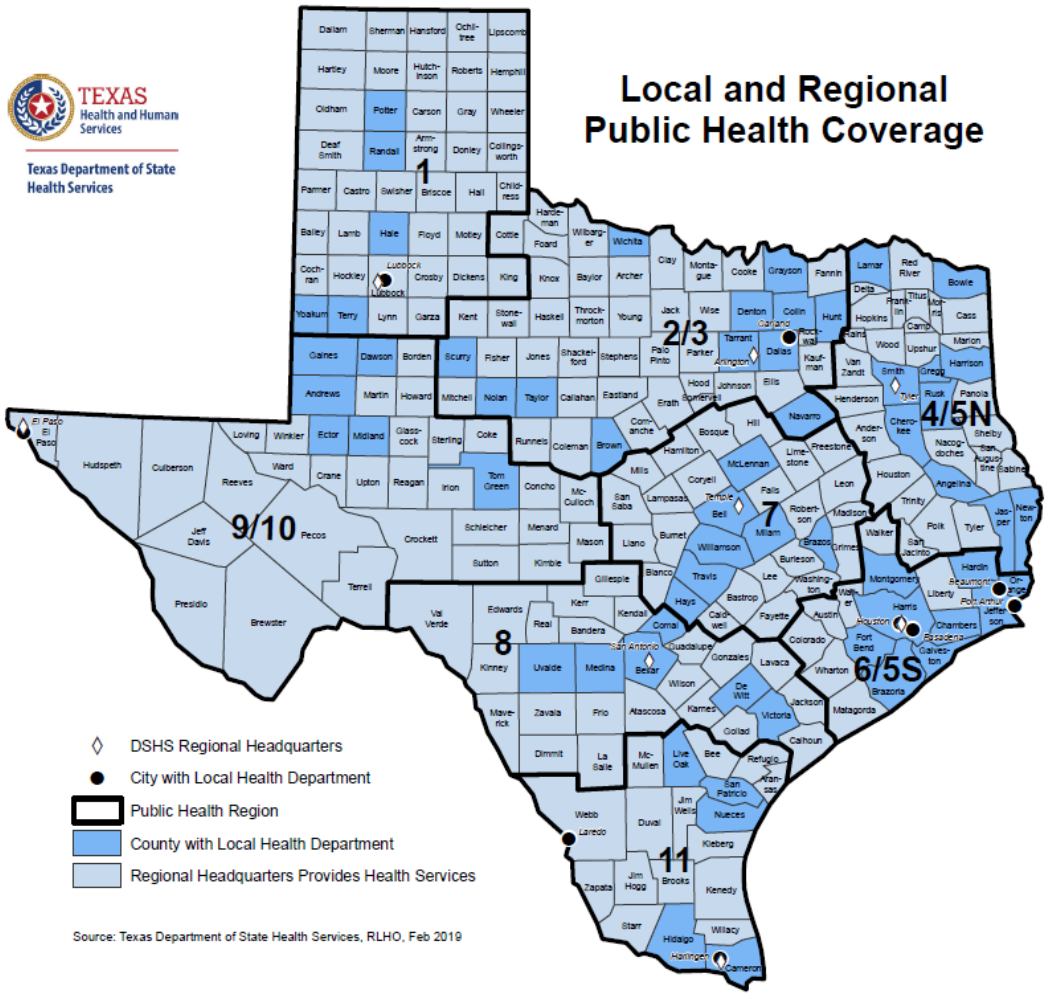
New Developments in NEDSS

NEDSS is continually evolving and expanding while trying to meet the changing needs of public health jurisdictions across Texas. Currently an exciting project examining electronic case reporting (ECR) is underway with three major local health entities. NEDSS is piloting a project with a specialized vendor to better understand how ECR can be efficiently exchanged to meet reporting needs and to ensure timely receipt of data across Texas. The expected outcome of this project will be the ability to exchange ECR for a designated condition. Once this is established work can be done to develop templates for additional conditions. The goal of ECR is to streamline case reporting efforts to improve data capture and quality while also increasing efficiency, timeliness, and cost-savings.

Appendix B.


COVID-19 Community Vulnerability Index
Socioeconomic Status
Below Poverty
Unemployed
Income
No High School Diploma
Household Composition & Disability
Aged 65 or Older
Aged 17 or Younger
Older than 5 years with a disability
Single-Parent Households
Minority Status & Language
Minority
Speaks English "Less than Well"
Housing Type & Transportation
Multi-Unit Structures
Crowding
No Vehicle
Group Quarters
Epidemiological Factors
Cardiovascular Conditions
Respiratory Conditions
Immunocompromised
Obesity
Diabetes
Population Density
Influenza & Pneumonia Death Rates
Healthcare System Factors
Health System Capacity
Health System Strength
Health System Preparedness
Social Vulnerability Index

Appendix C.


TEXAS
Health and Human Services
Texas Department of State Health Services
Local and Regional Public Health Coverage
1
2/3
4/5N
6/5S
7
8
9/10
11
DSHS Regional Headquarters
City with Local Health Department
Public Health Region
County with Local Health Department
Regional Headquarters Provides Health Services
Source: Texas Department of State Health Services, RLHO, Feb 2019