



Diabetes is a chronic disease that occurs when blood glucose, also known as blood sugar, is too high. Blood glucose is the main source of energy and comes from the foods we eat. When our blood sugar goes up, the pancreas releases a hormone called insulin. Insulin helps glucose from food get into our body cells to be used for energy. With diabetes, the body does not make enough insulin or cannot use it as well as it should, causing too much blood sugar to stay in the bloodstream. Consistently high blood sugar levels can cause serious damage to other organs and body systems.<sup>1</sup>



There are three main types of diabetes:



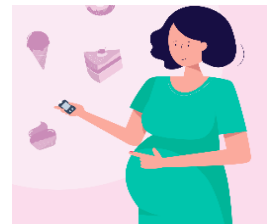
### Type 1 Diabetes (T1D)

The body attacks itself by mistakenly destroying the cells that produce insulin.<sup>1</sup>



### Type 2 Diabetes (T2D)

The body does not use insulin well. Type 2 diabetes is the most common form of diabetes and is often caused by factors such as excessive consumption of sugar-sweetened beverages, excess weight, and physical inactivity.<sup>1</sup>



### Gestational Diabetes

Develops in pregnant women who did not previously have diabetes. This type of diabetes goes away after the baby is born but increases risk for type 2 diabetes later in life for both mom and baby.<sup>1</sup>

## Key Findings from this Report

### Hospitalization for Diabetes

- Bexar County’s overall diabetes hospitalization rate is consistently higher than that of Texas overall.
- In Bexar County, diabetes hospitalization rates for children under 18 (pediatrics) increased between 2019 and 2020, with male children experiencing a 36% increase and female children experiencing a 15% increase.
- Among children 10-17, both type 1 and type 2 diabetes hospitalization rates increased between 2019 and 2020.
- Adult males in Bexar County consistently have higher rates of diabetes hospitalization compared to adult females.
- Zip codes with higher diabetes hospitalization rates are more common in central and southern parts of Bexar County.

### Hospitalization for Diabetic Amputations

- Bexar County consistently has higher hospitalization rates for diabetic amputations when compared to Texas overall.
- Males experience hospitalization for diabetic amputation at more than double the rate when compared to females.

### Diabetes Mortality

- Bexar County’s age-adjusted mortality rate for diabetes is higher than that of Texas overall, the US overall, and is also highest among the 5 largest counties in Texas.
- Diabetes mortality rates among NH-Black and Hispanic/Latino males are double the rate observed among NH-Whites males. Diabetes mortality rates among NH-Black and Hispanic/Latino females are almost 3x the rate observed among NH-Whites females.

### COVID-19 and Diabetes

- Covid-19 cases with underlying diabetes or cardiovascular disease (CVD) are at much greater risk of being hospitalized due to COVID-19 compared to those cases without underlying diabetes and CVD. For example, the risk of being hospitalized due to COVID-19 was 4 times greater among 30–39-year-old cases with underlying diabetes or CVD as compared to 30–39-year-old cases without underlying diabetes or CVD.

*\*NOTE: The collection of data and surveying of the population (by any agency or organization) in 2020 may have been affected in various ways due to the onset of the pandemic and associated consequences (e.g., lockdown, office closures, halting/delaying of data collection efforts). All 2020 data should be interpreted with caution and not used to make definitive conclusions in comparison to previous years. The eventual release of 2021 data should better and more consistently identify any health trends resulting from the effects of the pandemic.*

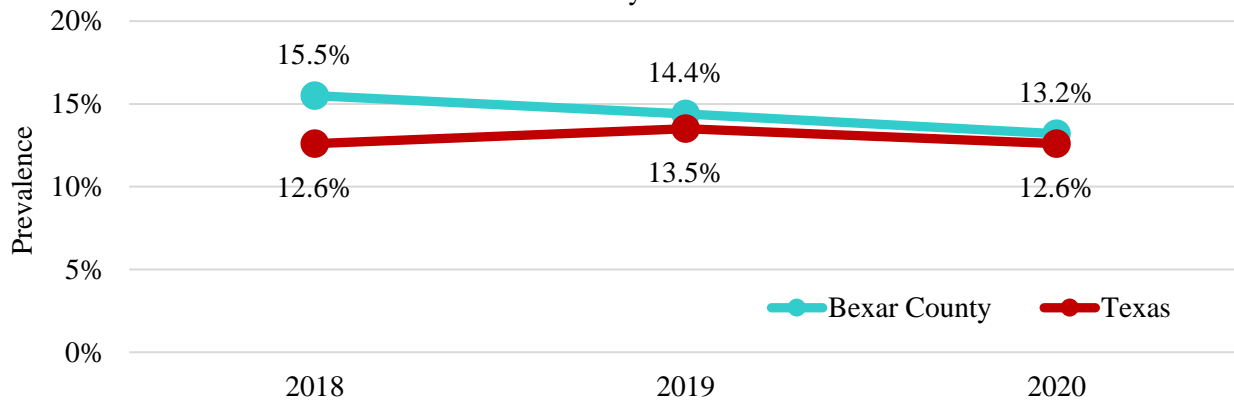
# 1. Overall Diabetes Status

In 2019, almost 37 million Americans of all ages (11.3% of the population) had diabetes.<sup>2</sup> In youth, about 283,000 Americans under age 20 are estimated to have diabetes.<sup>2</sup> Uncontrolled diabetes often leads to devastating complications such as nerve damage, blindness, kidney failure, and lower-limb amputations.<sup>3</sup> A person with diabetes has medical expenditures more than twice as high than individuals without this diagnosis.<sup>4</sup> By addressing diabetes, many other related health problems can be prevented or delayed. Additionally in 2020, COVID-19 was the 3<sup>rd</sup> leading cause of death in Bexar County. Mounting evidence reveals that diabetes is a major risk factor for symptomatic SARS-COV-2 infection and COVID-19-related hospitalization.<sup>5</sup> Diabetes patients with COVID-19 had a lower survival rate and a greater mortality rate than non-diabetic patients, according to various studies.<sup>6,7</sup> **This report provides 2019/2020 data on diabetes prevalence, hospitalization, and mortality in Bexar County, and highlights differences in diabetes according to age, sex, race/ethnicity, and zip code.**



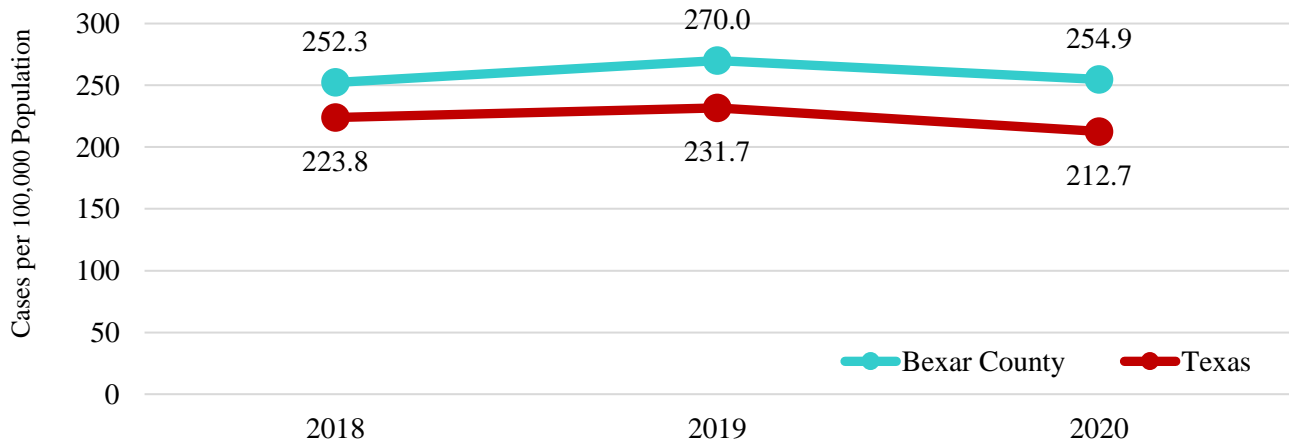
The prevalence of diabetes among adults surveyed in 2020 was similar to the prevalence reported in the previous years. In addition, the prevalence of diabetes reported by Bexar County adults is generally similar to the prevalence reported across Texas. (Figure 1).

**Figure 1.** Percent (%) of Surveyed Adults Reporting They Ever Had Diabetes, Bexar County vs. Texas



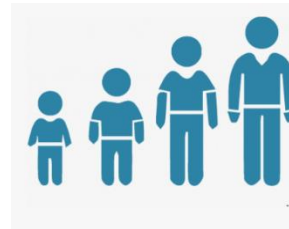
In both Bexar County and Texas overall, the diabetes hospitalization rate decreased slightly from 2019 to 2020. However, each year the diabetes hospitalization rate in Bexar County is consistently higher in comparison to the rate across Texas overall (Figure 2).

**Figure 2.** Inpatient Hospitalization Rates for Diabetes (All-ages), Bexar County vs. Texas



## 2. Diabetes Status – by Age and Sex

In Bexar County, pediatric (children under 18) hospitalization rates for diabetes have consistently increased over the last 3 years. While pediatric hospitalization rates were similar for males and females in 2018 and 2019, rates for both increased in 2020, with pediatric males experiencing a larger increase compared to pediatric females (**Figure 3**).

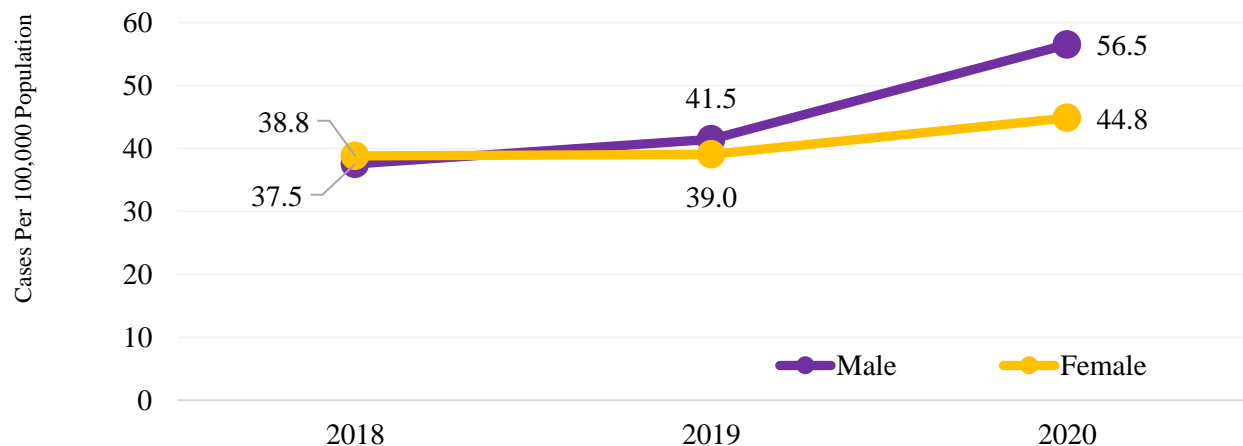


**Males have higher** diabetes rates when compared to females across all ages.

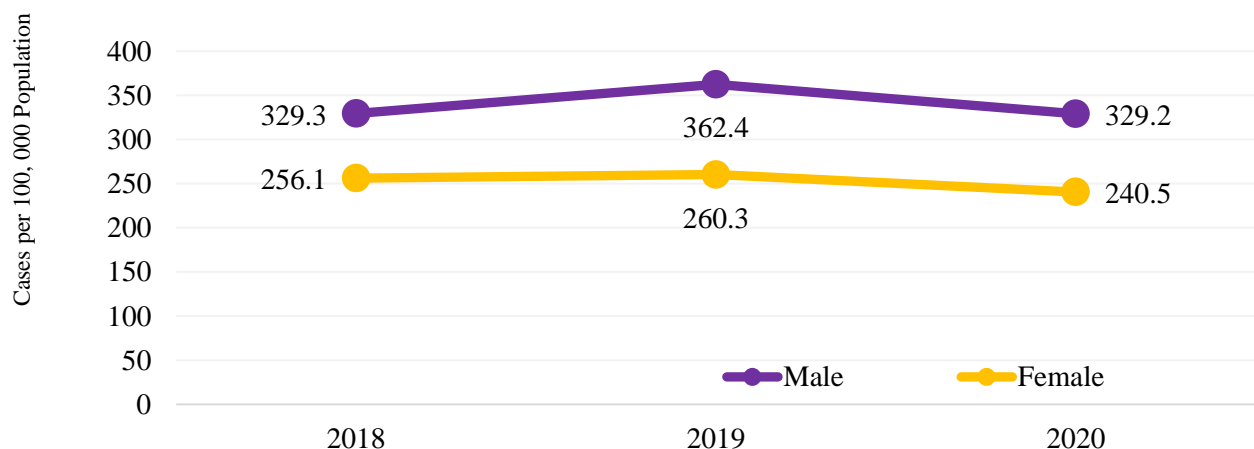
From 2019 to 2020, hospitalization rates increased 36% and 15% for pediatric males and females, respectively (**Figure 3**).

Adult hospitalization rates for diabetes in Bexar County have been consistently higher for males than females over the last 3 years, however rates among both males and females slightly decreased\* from 2019 to 2020 (**Figure 4**).

**Figure 3. Pediatric Inpatient Hospitalization Rates for Diabetes - by Sex, Bexar County**



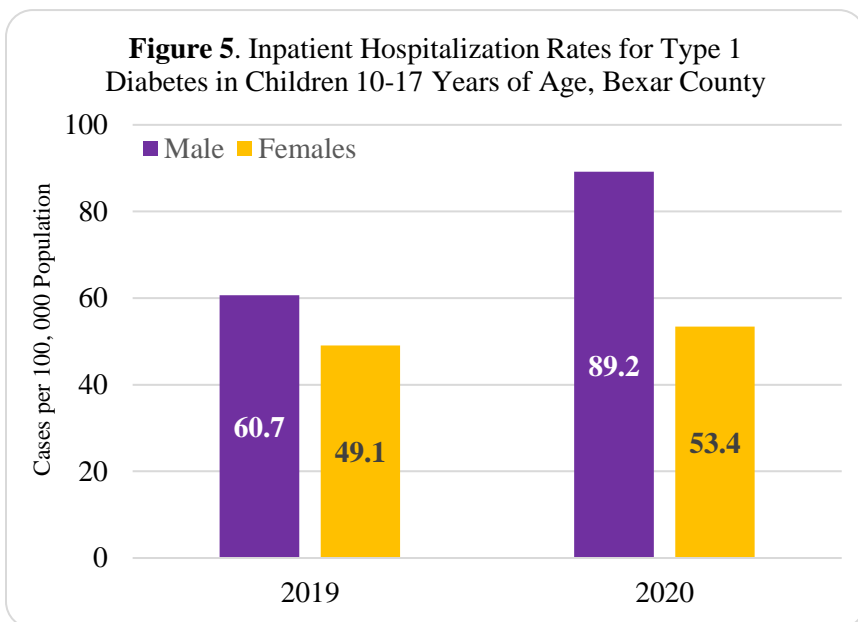
**Figure 4. Adult Inpatient Hospitalization Rates for Diabetes - by Sex, Bexar County**



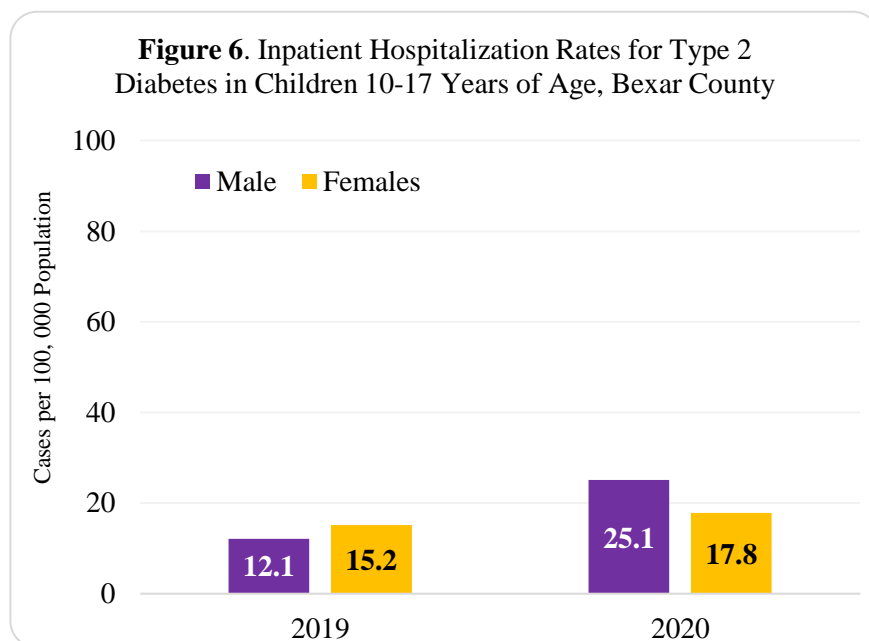
\* Hospitalizations in 2020 may have been affected by a host of factors related to the COVID-19 pandemic, such as changes in health-seeking behavior by those in need, changes in hospital admission processes and capacity, as well as disruptions in hospital discharge data collection. 2020 Data should be interpreted with caution.

## 2. Diabetes Status by Age and Sex (continued)

Diabetes is one of the most common chronic diseases among youth. Results from SEARCH, a national multicenter study, show a rise in new cases of diabetes in children and youth in the US.<sup>9</sup> From 2019 to 2020, inpatient hospitalization rates for type 1 diabetes in Bexar County children 10-17 increased 47% for males and 9% for females (**Figure 5**).



In 2019, females 10-17 years old were hospitalized for type 2 diabetes at a slightly higher rate than males in the same age group (**Figure 6**). However, this trend reversed in 2020, with males 10-17 years old being hospitalized for type 2 diabetes more than females (**Figure 6**). In addition, type 2 diabetes inpatient hospitalization rates increased from 2019 to 2020 for both males and females in this age group, increasing by 107% for males and 17% for females.



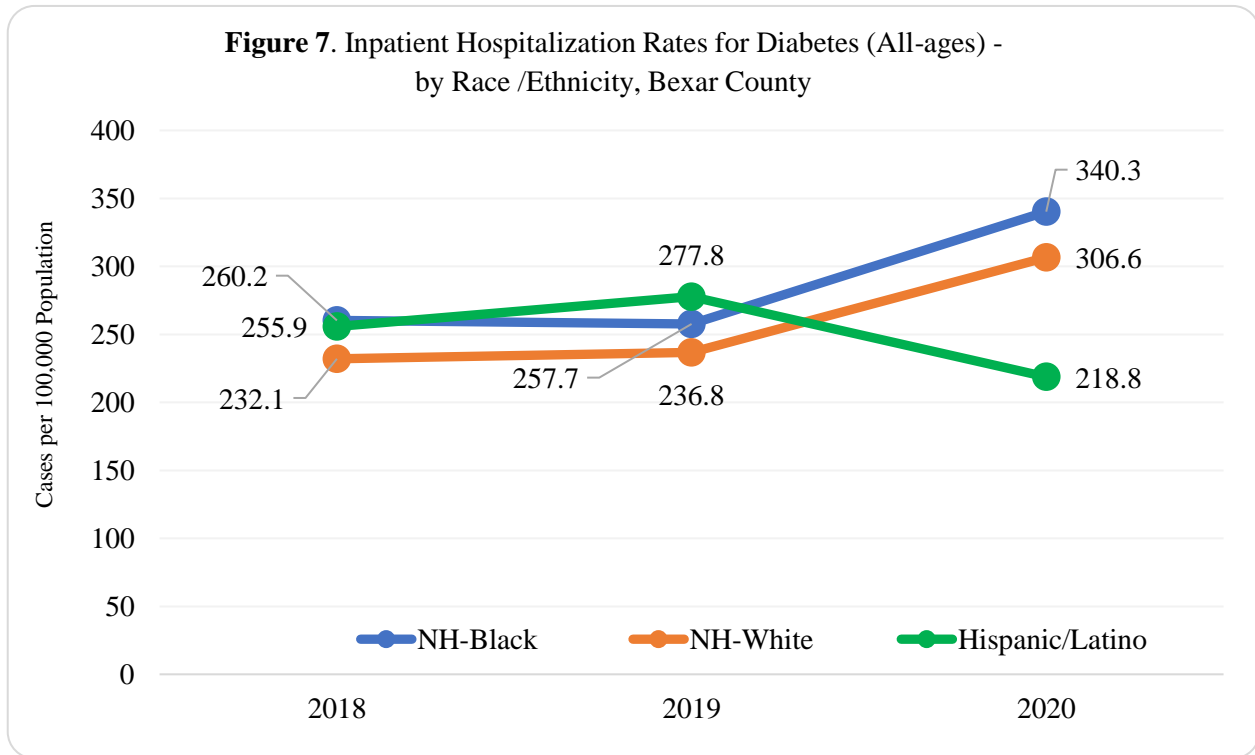
Both **Type 1 and Type 2 diabetes** hospitalization rates **increased** for children ages 10 to 17 in 2020.



To decrease potential exposures to COVID-19, children were enrolled in school virtually and extracurricular activities were limited. Possible consequences of these changes to daily routines may include unhealthy eating habits, decreased physical activity and increased screentime which might be associated with increased weight and risk of type 2 diabetes.<sup>10</sup>

### 3. Diabetes Status – by Race/Ethnicity

In 2018 and 2019, inpatient hospitalization rates for NH-Blacks and Hispanic/Latinos were higher when compared to NH-Whites. In 2020, diabetes hospitalization rates increased by 32% and 29% for NH-Blacks and NH-Whites respectively. Conversely, rates for Hispanic/Latinos decreased by 21% in 2020 (**Figure 7**).



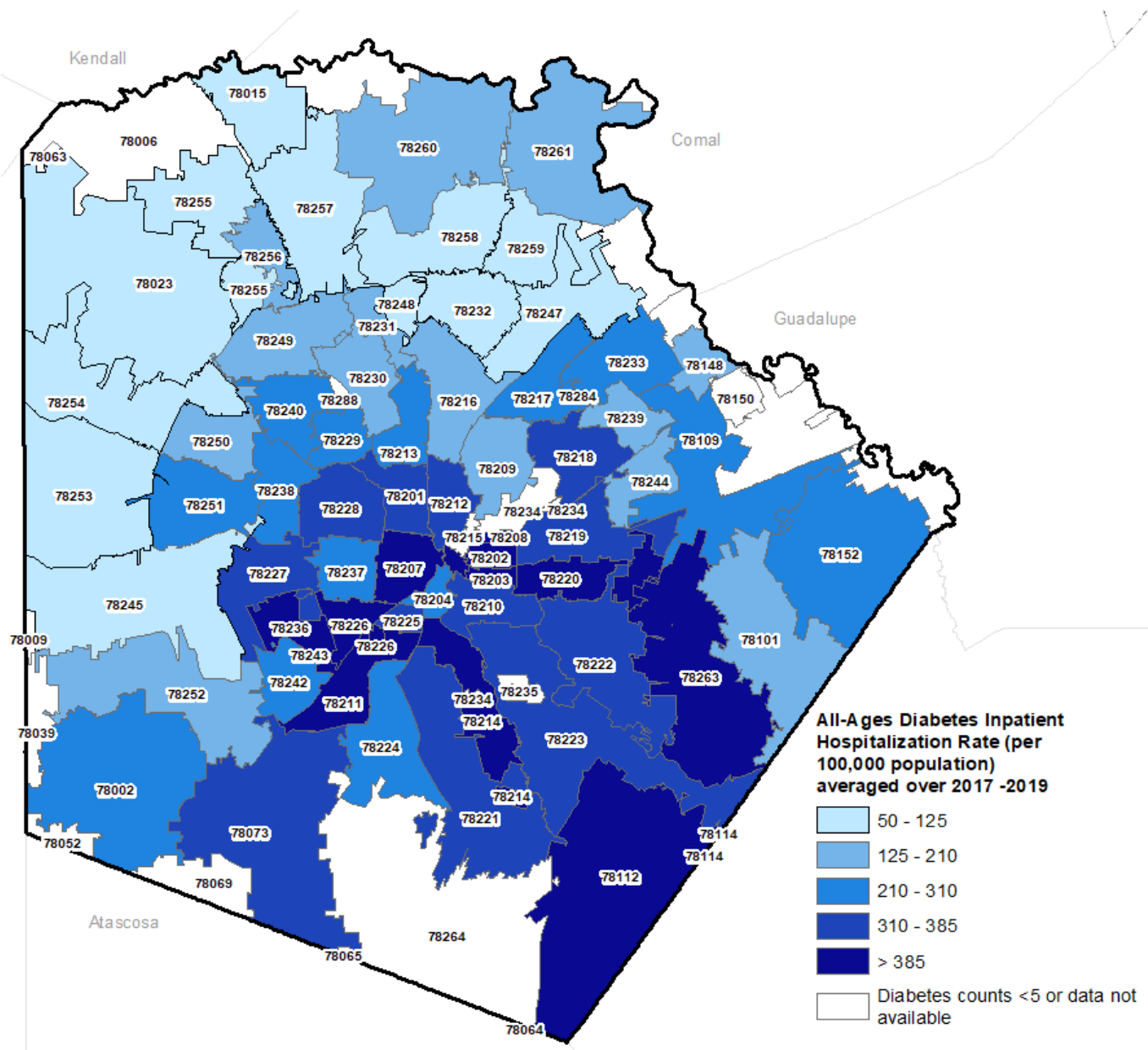
Despite the decrease in the diabetes hospitalization rate for Hispanic/Latinos, it is important to note that diabetes *mortality* rates still increased for both males and females from 2019 and 2020 (see previous [annual report](#)). Lower hospitalization rates among Hispanic/Latino may have been due to several factors. A study by Center, K.E *et al.* among Hispanic individuals found limited health care use related to low familiarity with health care systems, high levels of preexisting medical mistrust and language barriers resulting in delayed medical treatment for COVID-19.<sup>11</sup>



From 2019 to 2020, diabetes hospitalization rates **increased by 32% for NH-Blacks** and **29% for NH-Whites**.

## 4. Diabetes Status – by Zip Code

**Figure 8.** Bexar County Diabetes Hospitalization Rate (All ages) by Zip Code, averaged from 2017-2019



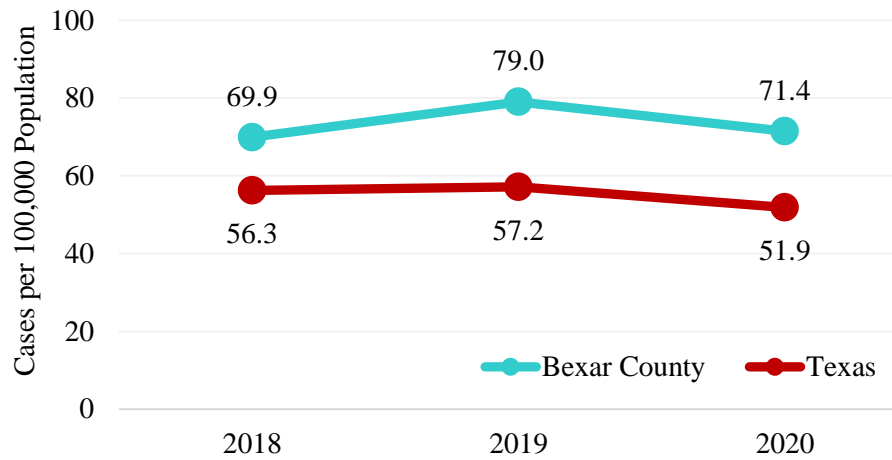
**Figure 8.** Shows diabetes hospitalization rates averaged over 2017, 2018 and 2019. Zip codes in the darkest blue are those with the highest diabetes hospitalization rates in San Antonio. Zip codes with higher hospitalization rates are more common in central and southern parts of Bexar County.

## 5. Diabetes and Complications

Diabetes can lead to complications, including kidney failure, leg amputation, vision loss and nerve damage. Furthermore, it can increase the overall risk of dying prematurely.

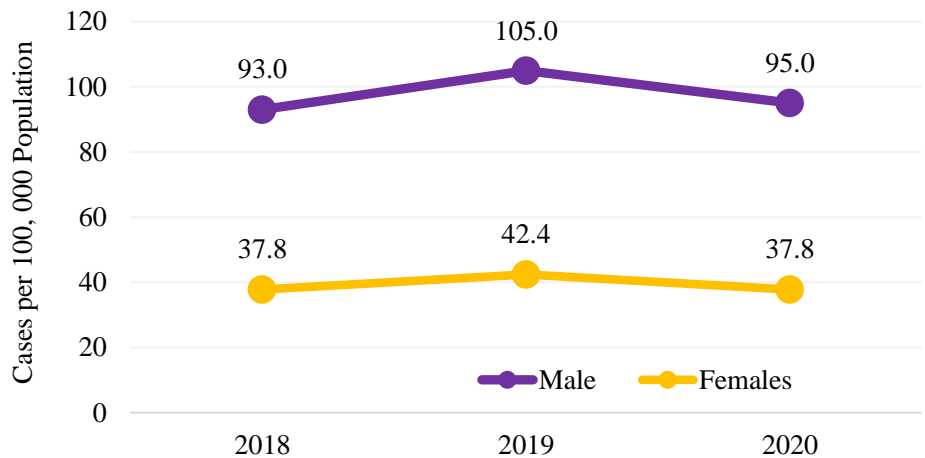
In both Bexar County and Texas Overall, there was a minor decrease in hospitalization rates for diabetic amputations when comparing 2019 to 2020. Bexar County, however, continues to have a higher hospitalization rate for diabetic amputations when compared with Texas overall (**Figure 9**).

**Figure 9.** Inpatient Hospitalization Rates for Diabetes Lower Limb Amputations, Bexar County vs. Texas



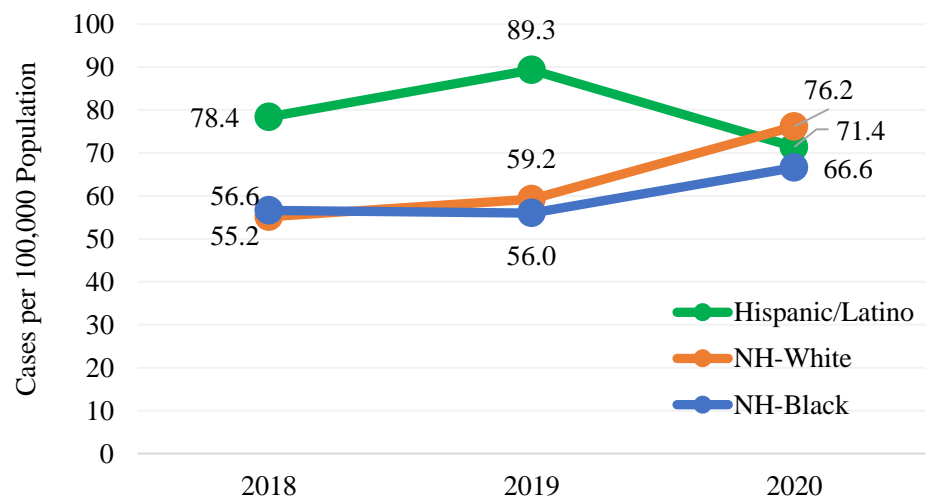
Diabetes amputation rates are consistently higher among males than females in Bexar County, with rates among males being more than double the rates among females (**Figure 10**). Research suggests that men are more likely to undergo the procedure and more likely to have some of the additional risk factors for amputations, such as diabetic foot ulceration, artery disease, cigarette use, and peripheral nerve damage.<sup>12</sup>

**Figure 10.** Inpatient Hospitalization Rates for Adult Diabetic Amputations - by Sex, Bexar County



In 2018 and 2019, Hispanic/Latinos in Bexar County experienced a higher burden of diabetic amputations when compared to NH-Whites and NH-Blacks. In 2020, the disparity gap appeared to narrow. From 2019 to 2020, Inpatient hospitalization rates for diabetic amputations increased by 29% and 19% for NH-White and NH-Blacks, respectively, but the rate decreased by 20% for Hispanics/Latinos (**Figure 11**).

**Figure 11.** Inpatient Hospitalization Rate for Diabetic Amputations - by Race/Ethnicity, Bexar County



## 6. Diabetes Mortality

Diabetes is also consistently among the top causes of death in Bexar County, and mortality from diabetes in Bexar County stands out compared to other regions. In 2020, the age-adjusted mortality rate for diabetes mellitus in Bexar County (32.2 per 100,000 population) was higher than the rate in Texas (26.7 per 100,000 population) and the US (24.8 per 100,000 population).

**Figure 12.** Diabetes Mortality Rates Across the Five Largest Counties in Texas, 2020

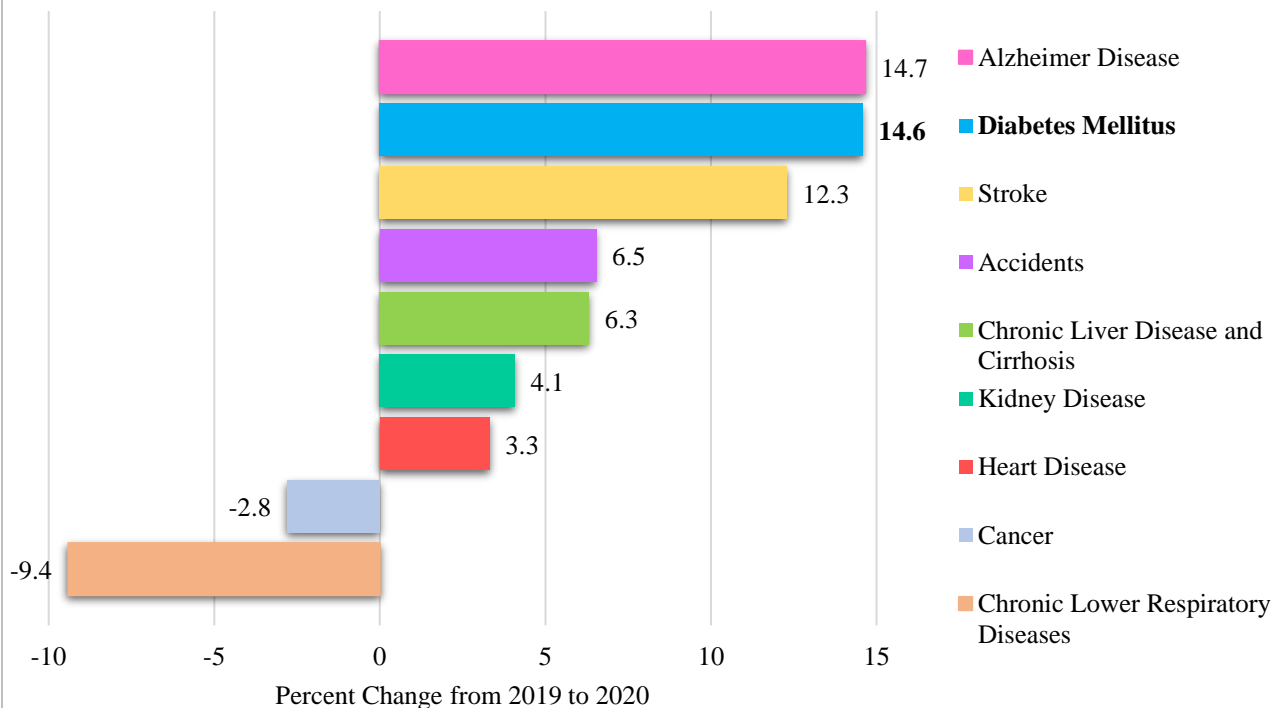
Among the five largest counties in Texas, Bexar County had the highest 2020 diabetes age-adjusted mortality rate (**Figure 12**).

County	Deaths	Population	Age-adjusted Mortality Rate
<b>Bexar County, TX</b>	<b>640</b>	<b>2,026,823</b>	<b>32.2</b>
Tarrant County, TX	608	2,123,347	29.6
Dallas County, TX	624	2,635,888	25.8
Harris County, TX	1,028	4,738,253	23.7
Denton County, TX	137	919,324	17.0
Texas	7990	29360759	26.7
USA	102188	329484123	24.8

Rates are per 100,000 population

Between 2019-2020, diabetes had the second largest increase in age-adjusted mortality rate in Bexar County compared to the other top causes of death (**Figure 13**).

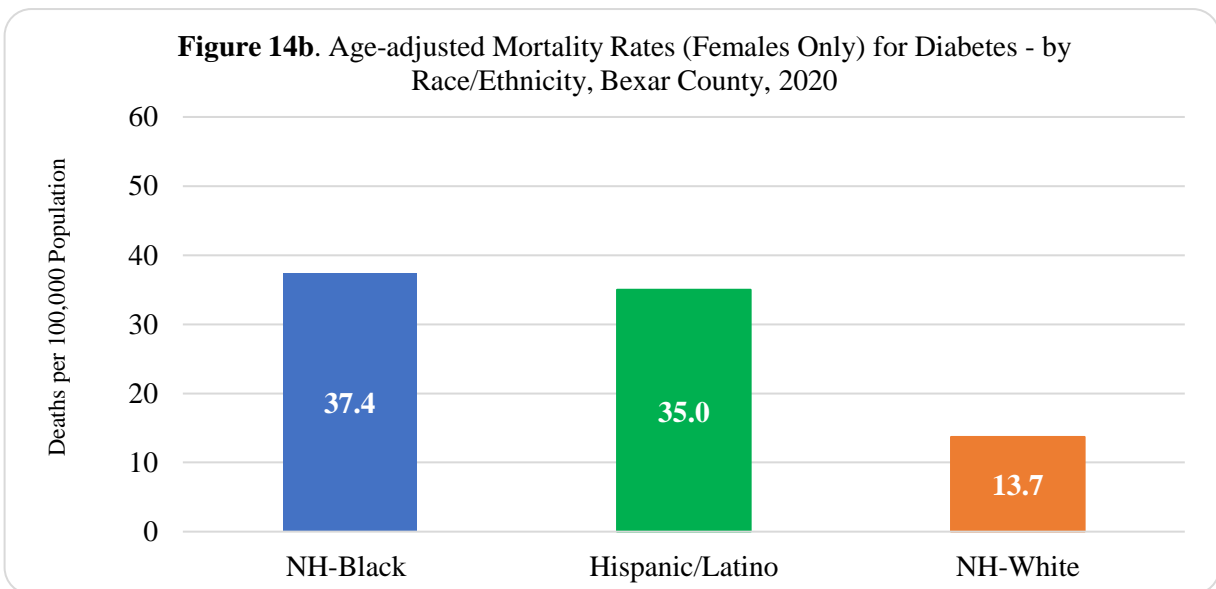
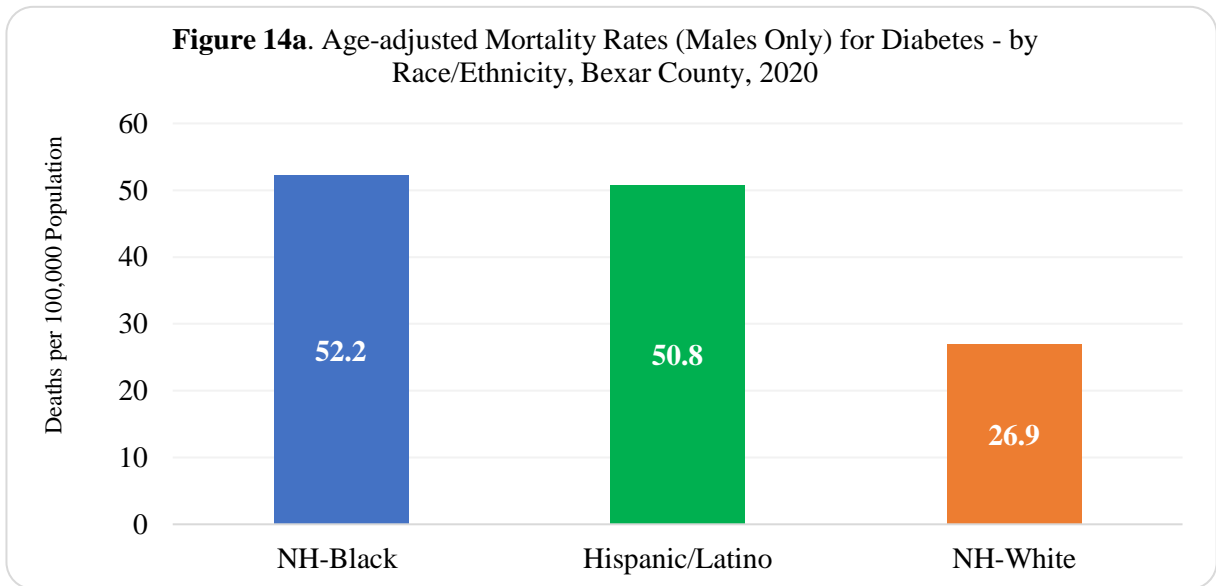
**Figure 13.** Percent change in Bexar County Age-adjusted Mortality Rate between 2019 and 2020, by Cause of Death





## 6. Diabetes Mortality (continued)

Among both males and females, Non-Hispanic Blacks and Hispanic/Latinos had similar diabetes age-adjusted mortality rates in 2020, both higher than that observed among NH-Whites (**Figure 14a and Figure 14b**). Specifically, the diabetes mortality rate among NH-Black and Hispanic/Latino males is double the rate among NH-White males. Similarly, the diabetes mortality rate among NH-Black and Hispanic/Latino females is close to 3 times higher than the rate among NH-White females.



Diabetes mortality rates among NH-Black and Hispanic/Latino **males** are **double the rate** observed among NH-Whites males.

Diabetes mortality rates among NH-Black and Hispanic/Latino **females** are almost **3x the rate** observed among NH-Whites females.

## 7. Diabetes & COVID-19

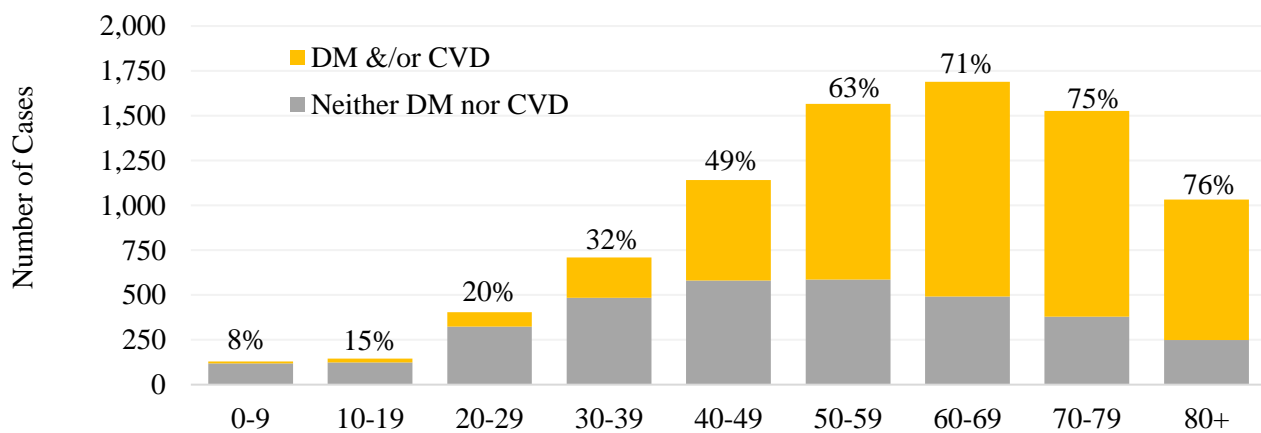
Those with diabetes and related underlying conditions are at an increased risk of suffering severe symptoms and complications from COVID-19.

**Figure 15** shows COVID-19 hospitalized cases by age group, and the yellow portion of each bars indicates what proportion of the hospitalized cases in that age group had diabetes or cardiovascular disease (CVD) as an underlying condition.

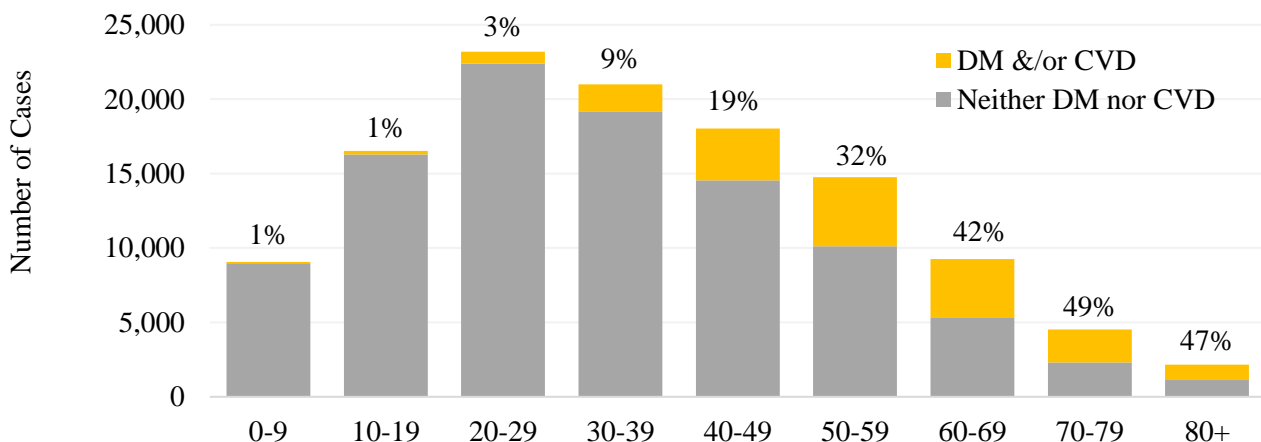
**Figure 16** shows NON-hospitalized COVID-19 cases by age group, and again the yellow portion of each bar indicates what proportion of the non-hospitalized cases had diabetes or CVD as an underlying condition.

Comparing the yellow portions of Figure 15 to respective yellow portions of Figure 16 clearly shows that Diabetes and CVD are much more prevalent among hospitalized cases, no matter the age group.

**Figure 15.** Presence of Underlying Diabetes or Cardiovascular Disease among COVID-19 Hospitalized Cases, by Age Group (N = 8,344), Bexar County



**Figure 16.** Presence of Underlying Diabetes or Cardiovascular Disease among NON-Hospitalized COVID-19 Cases, by Age Group (N = 118,493), Bexar County



*The City of San Antonio's COVID-19 response team prepared data collected by the State Texas Health Trace (THT) system. **The analyses for this section are restricted to data from a 12-month period from June 2020 till the end of May of 2021** and include only cases with medical history available (57.5% of cases).*

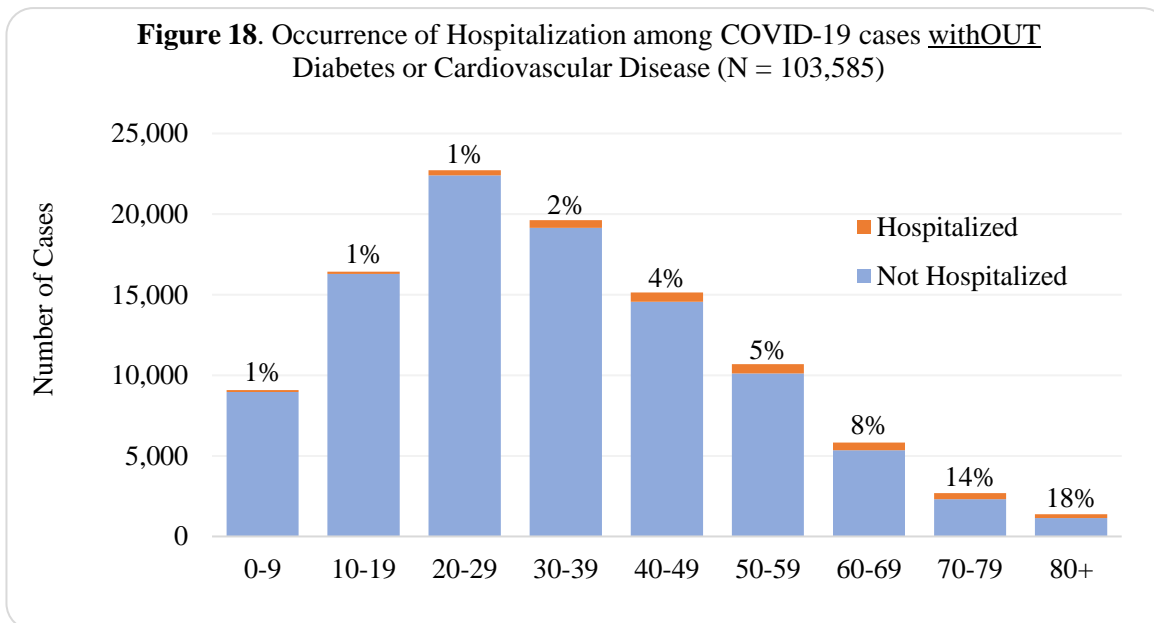
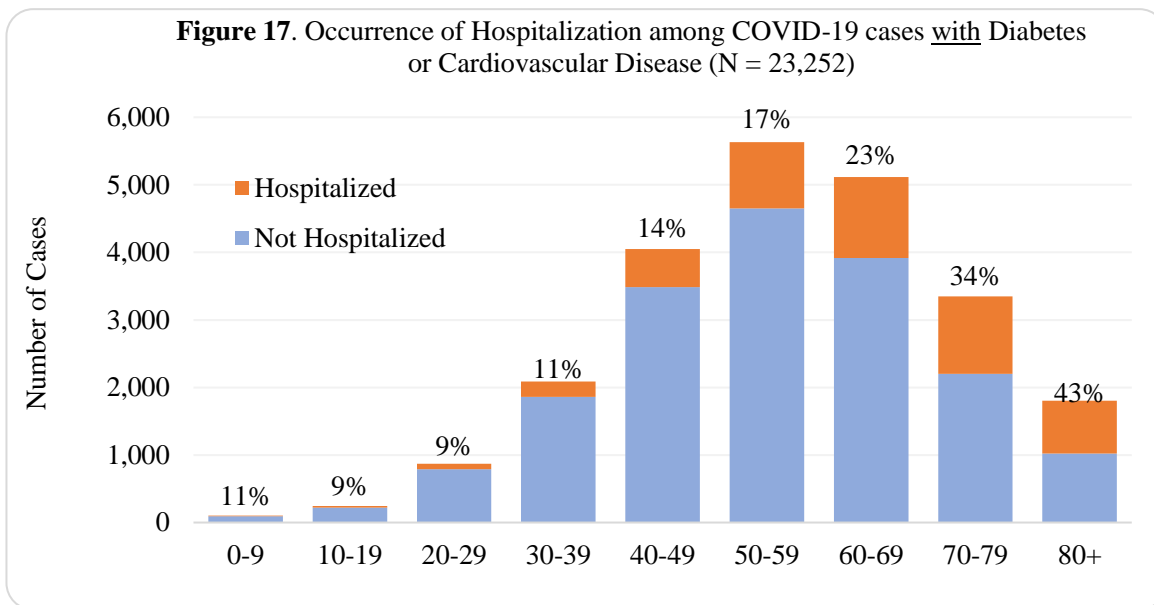
## 7. Diabetes & COVID-19 (continued)

Another way to look at the impact of underlying conditions on COVID-19 experience is to look at the *risk* of being hospitalized for COVID-19 when having an underlying condition such as diabetes or CVD.

**Figure 17** shows COVID-19 cases with underlying diabetes or CVD by age group, and the orange portion of each bars indicates what proportion of these cases were hospitalized after getting infected with COVID-19.

**Figure 18** shows COVID-19 cases without underlying diabetes or CVD by age group, and again, the orange portion of each bars indicates what proportion of these cases were hospitalized after getting infected with COVID-19.

Comparing the orange portions of figure 17 to respective orange portions of figure 18 clearly shows that COVID-19 cases with underlying diabetes or CVD are much more likely to be hospitalized b/c of COVID-19. In other words, they are at much greater *risk* of being hospitalized. For example, the risk of being hospitalized due to COVID-19 was 4 times greater among 30–39-year-old cases with underlying diabetes or CVD as compared to 30–39-year-old cases without underlying diabetes or CVD



The City of San Antonio's COVID-19 response team prepared data collected by the State Texas Health Trace (THT) system. The analyses for this section are restricted to data from a 12-month period from June 2020 till the end of May of 2021 and include only cases with medical history available (57.5% of cases).

## 8. Metro Health's SA Forward Plan to Reduce the Burden of Diabetes

SA Forward is Metro Health's strategic plan that includes the most pressing health issues reported by thousands of San Antonio residents and stakeholders as well as lessons learned from the COVID-19 pandemic. This strategic plan will focus on six priority areas, one of which is Food Insecurity and Nutrition. This priority area includes an initiative to expand the peer-led diabetes prevention programs to reduce the burden of diabetes in Bexar County. Currently the Diabetes Prevention and Control program offers no cost services to prevent and control diabetes. Given that diabetes is one of the top risk factors for COVID-19 hospitalizations, Metro Health will provide diabetes education in areas of San Antonio most impacted by the pandemic. Through community partnerships with UT Health, University Health, and clinics in high needs areas, prediabetic individuals will be referred to diabetes prevention workshops to learn ways to improve their overall health and help prevent diabetes and its complications. To learn more about SA Forward and diabetes prevention efforts, please visit: <https://dashboards.mysidewalk.com/city-of-san-antonio-strategic-health-plan-dashboard-5bbc32e941c7/food-systems-nutrition>



### Diabetes Prevention & Control

This program offers NO COST services to the community to help prevent and control diabetes. Trained lifestyle coaches and health program specialists participate in community events and workshops bringing diabetes awareness and education.

#### Report produced by Metro Health's Informatics Team. Authors: Maciel Ugalde, PhD; Golareh Agha, PhD

Data sources: Diabetes hospitalization: Texas Hospital Inpatient Discharge Public Use Data File, Texas Department of State Health Services; ICD-10 diagnosis codes used for diabetes as primary diagnosis: E8-E13 and OY6. American Community Survey (ACS): Tables S0101 (2018, or 2019 data used where appropriate) and 2020 Vintage Population Estimates. COVID-19 data: Bexar County case data obtained from State Texas Health Trace (THT) system; prepared by City of San Antonio Covid-19 Response Data Team (Joan Cunningham, PhD, Epidemiologist)



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