CITY OF SAN ANTONIO
METROPOLITAN HEALTH DISTRICT

Status of Asthma in 2018-2019 Bexar County, Texas

The most recent data available at the time of compiling this report varied, with some sources having 2017 data available while others having 2019 data. Similarly, some sources have data available for only San Antonio, while in others have data available for all of Bexar County. ***A full list of data sources and references is available at the end of the report****.*

This report provides 2018/2019 data on asthma prevalence and hospitalization in Bexar County, and highlights differences in asthma according to age, sex, race/ethnicity, region, and socioeconomic factors. Socioeconomic and racial/ethnic disparities are common in Bexar County, and lead to a disproportionate burden of asthma among communities that have long been exposed to social disadvantage and racial inequities.

More than 25 million Americans have asthma[1], and the per-person medical cost of asthma is more than $3,000/year. Aside from direct costs such as medicine, hospital stay, and urgent care visits, indirect costs such as missed work, school absenteeism, and lost productivity have a major collective impact on the livelihood of Americans.[2]

Environmental factors that can trigger and exacerbate asthma include airborne allergens (e.g. pollen, mold, dust mites), occupational exposures, air pollution, and tobacco smoke (firsthand, secondhand, and thirdhand smoke).

Factors that contribute to the *development* of asthma are multi-factorial and complex. However, what is well-known is that upstream determinants at multiple levels[3] have an impact:

- Structural determinants (e.g. systemic racism, residential segregation, discriminatory policies, …).
- Social determinants (e.g. education level, employment status and type, access to health care, …).
- Environmental determinants (e.g. exposure to tobacco smoke, pollution, built environment, housing quality, …).

Key points from the Report

- Bexar County's overall asthma hospitalization rate is consistently higher than that of Texas overall.
- Among Bexar County's pediatric population, male children are hospitalized for asthma at higher rates than female children. Among adults, however, females are hospitalized for asthma at considerably higher rates than males.
- Non-Hispanic (NH) Black individuals consistently experience a higher rate of asthma hospitalization in comparison to NH-White individuals and Hispanic/Latinos.
- Bexar County zip codes with higher levels of uninsured residents also show higher levels of asthma hospitalization rates. Bexar County census tracts with higher levels of uninsured residents also show higher levels of asthma prevalence.
- Housing problems are also strongly correlated with asthma in Bexar County: census tracts that have a higher percentage of households with housing problems also have higher levels of asthma reported.
- Smoking shows the strongest correlation with asthma in Bexar County: The higher the percentage of current smokers in a census tract, the higher the prevalence of asthma in that census tract.

Overall Asthma Status

The prevalence of self-reported adult asthma in Bexar County was similar to that of Texas overall in 2018. However, Bexar County's Asthma prevalence in 2019 increased, putting it several percentages above that of Texas (**Figure 1** – *see footnote below figure however*).

Examining the most recent years of inpatient hospitalization data shows that the overall asthma hospitalization rate in Bexar County is consistently higher in comparison to the rate for Texas overall (**Figure 2**).

Figure 1. Percent (%) of Surveyed Adults Reporting They Ever Had Asthma, Bexar County

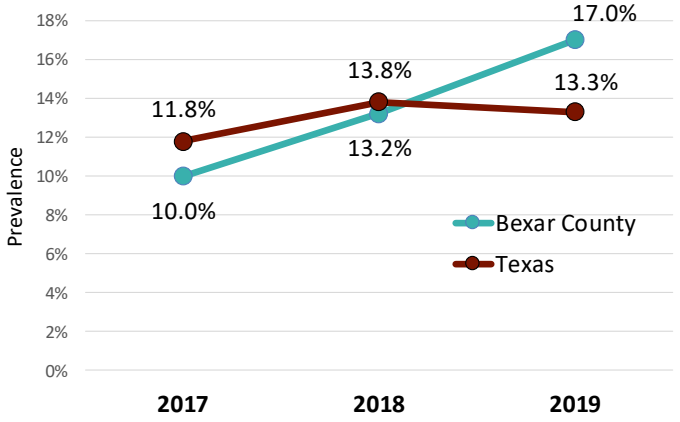
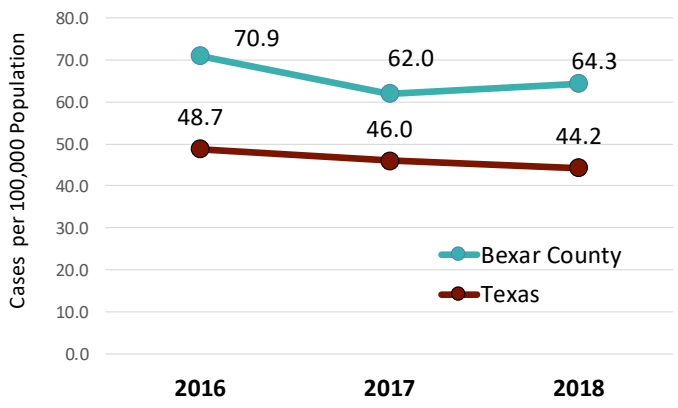


Figure 2. Inpatient Hospitalization Rate for Asthma (All-ages) as Primary Diagnosis, Bexar County



Bexar County's population surveyed for the BRFSS study (source of data above) consisted of a higher proportion of women in the 2019 sample vs. the 2018 sample. Given that asthma rates are higher among adult women than men, this may explain the higher asthma prevalence seen in 2019 vs. 2018.

Asthma Differences by Age and Sex

More common in children than in adults, asthma is the leading chronic disease in children nationally. As of 2017, 1 in 12 children in the US were estimated to have asthma.

Among children, asthma prevalence and mortality are more common in males than females. However, this trend reverses in adulthood: adult females more commonly have asthma, and they are at higher risk of dying from asthma compared to adult males.

Hospitalization data for Bexar County reveals similar trends. Male children in Bexar County are hospitalized for asthma at higher rates than female children (**Figure 3**). The opposite is seen for adults: adult females are hospitalized for asthma at a notably higher rate than adult males, a trend that is consistent over time (**Figure 4**).

Figure 3. Inpatient Hospitalization Rates for Pediatric Asthma as Primary Diagnosis by Sex, Bexar County, 2018

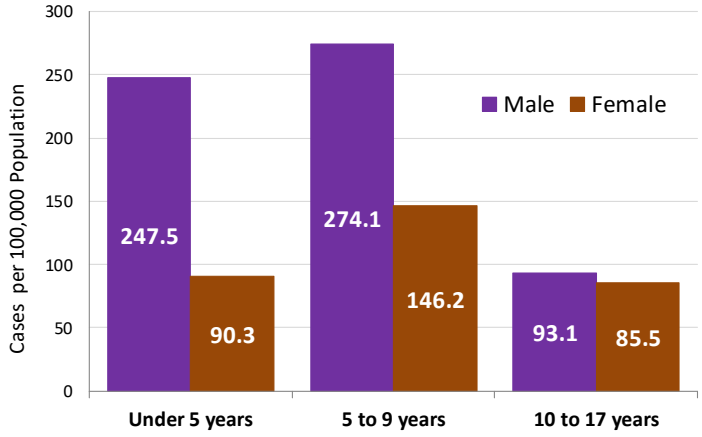
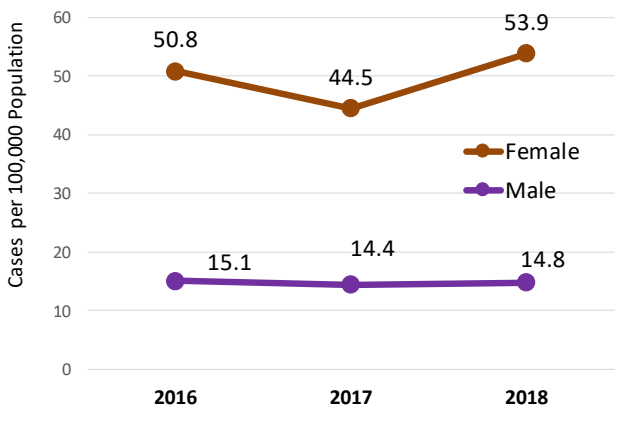


Figure 4. Inpatient Hospitalization Rate for Adult Asthma as Primary Diagnosis by Sex, Bexar County



Asthma Differences by Race/Ethnicity

Racial/ethnic disparities in asthma are also common and well-documented. Non-Hispanic (NH) Black individuals (particularly NH-Black women) in the US die from asthma at a rate three times higher than other race/ethnic groups. NH-Black children in the US have the highest prevalence of Asthma. In addition, asthma-related emergency department visits are nearly 5 times higher for NH-Black patients compared to White patients.[3]

Data available for Texas overall shows that NH-Black individuals generally report a higher asthma prevalence than NH-White individuals and Hispanic/Latinos, and that Hispanic/Latinos report the lowest*. However, this trend reversed in 2019: asthma prevalence for NH-Black individuals dropped to match that of NH-White individuals, while the prevalence for Hispanic/Latinos is steadily increasing since 2017 (**Figure 5**). In Bexar County, asthma hospitalization is consistently highest among NH-Black individuals, while the rates for NH-White individuals and Hispanic/Latinos are generally similar (**Figure 6**).

Figure 5. Percent (%) of Surveyed Adults Reporting They Ever had Asthma, by Race/Ethnicity, Texas

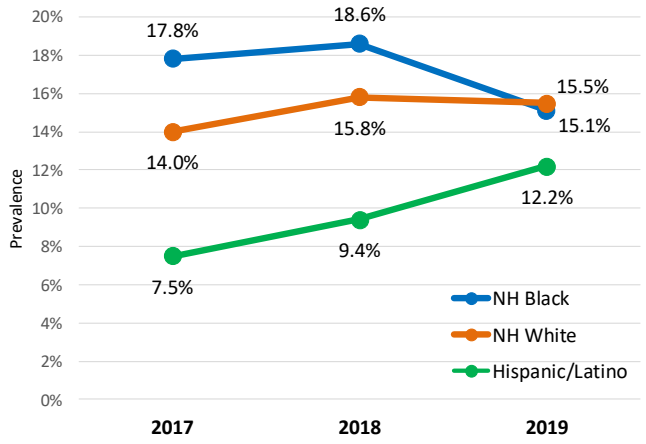
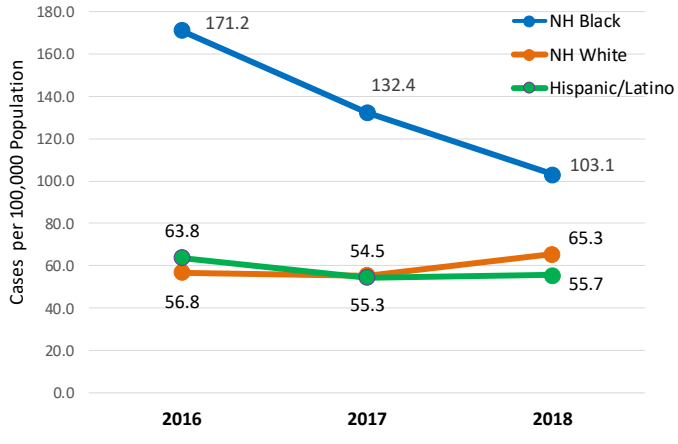


Figure 6. Inpatient Hospitalization Rate for Asthma (All-ages) as Primary Diagnosis by Race/Ethnicity, Bexar County



*(*__note for Figure 5__: numerous studies show Puerto Ricans have a higher prevalence of asthma than any other Hispanic subgroup or any other racial/ethnic group, however data on Hispanic subgroups is not available from the data source. Combining all subgroups into one may lead to high levels in certain subgroups being masked).*

Socioeconomic Factors Related to Asthma

The Asthma and Allergy Foundation of America (AAFA) conducted comprehensive research and recently produced an asthma report highlighting several risk factors that strongly influence variation in asthma rates across US cities.[4] These risk factors include *poverty*, *lack of health insurance*, *smoking laws*, *poor air quality*, *asthma medication use*, *pollen*, and *access to specialists*.

Many of these risk factors are highly relevant in San Antonio/Bexar County. For example, AAFA ranked cities from the top 100 most populated Metropolitan Statistical Areas (MSAs) based on each of each risk factor, and San Antonio ranked 7th out of 100 for having the highest number of uninsured residents. Access to health care plays an important role in managing asthma symptoms, preventing exacerbations, and promoting better quality of life – and inadequate health insurance coverage is one of the most profound barriers to quality health care.

A national study conducted by AAFA showed that the majority of asthma patients who had difficulty paying for health care were those with no or partial health coverage.[5] In addition, asthma sufferers that did not have health insurance visited emergency rooms more than those with health insurance.[6]

In Bexar County, data at the zip code and census tract level show that lack of insurance is correlated with asthma. Lack of insurance can directly impact asthma, or there may be other factors, related to lack of insurance (e.g. employment type and status) that have a more direct impact on asthma.

Figure 7 shows that lack of insurance is positively correlated with pediatric asthma hospitalization at the zip code level: the higher the % of uninsured people in a zip code, the higher the pediatric hospitalization rate in that zip code is likely to be.

In other terms, zip codes characterized by a higher percentage of uninsured people also tend to be characterized by higher pediatric asthma hospitalization.

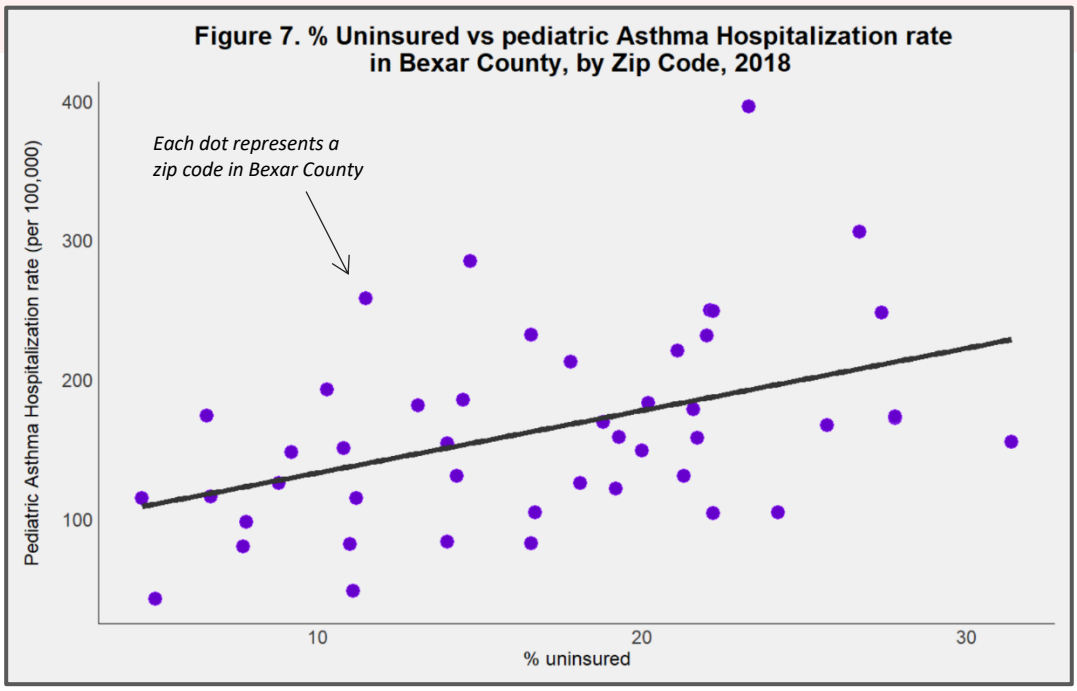
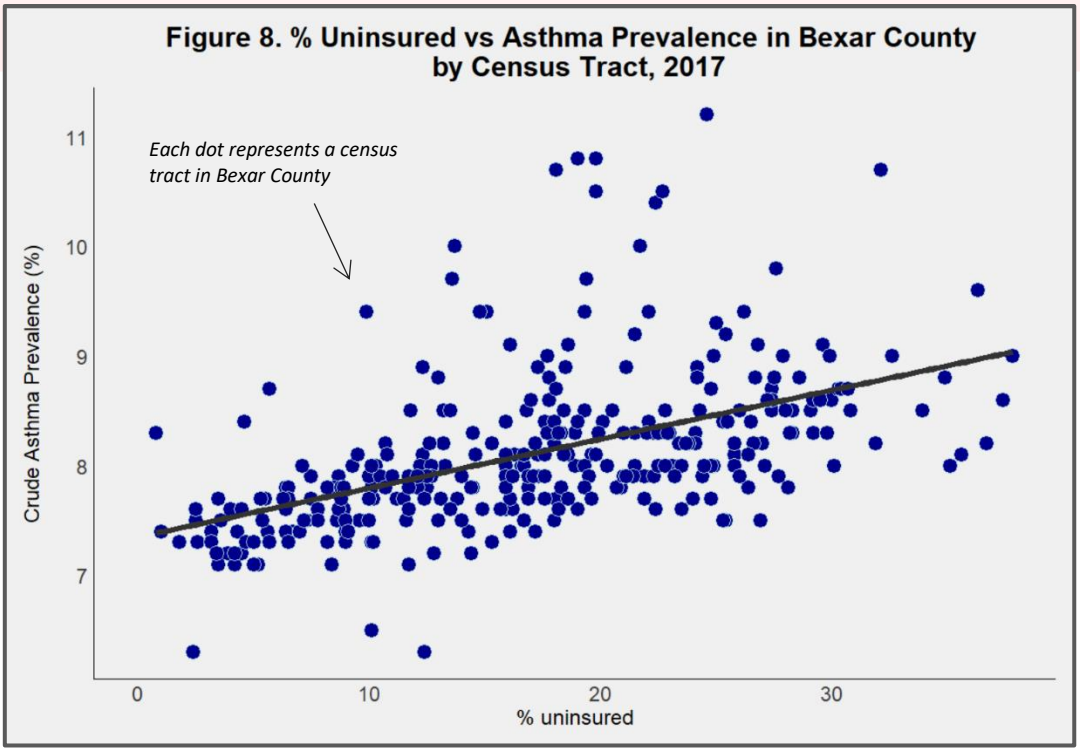


Figure 8 shows that lack of insurance is also positively correlated with adult asthma prevalence at the census tract level: the higher the % of uninsured people in a census tract, the higher the asthma prevalence in that census tract is likely to be.

In other terms, census tracts characterized by a higher percentage of uninsured people also tend to be characterized by higher prevalence of asthma



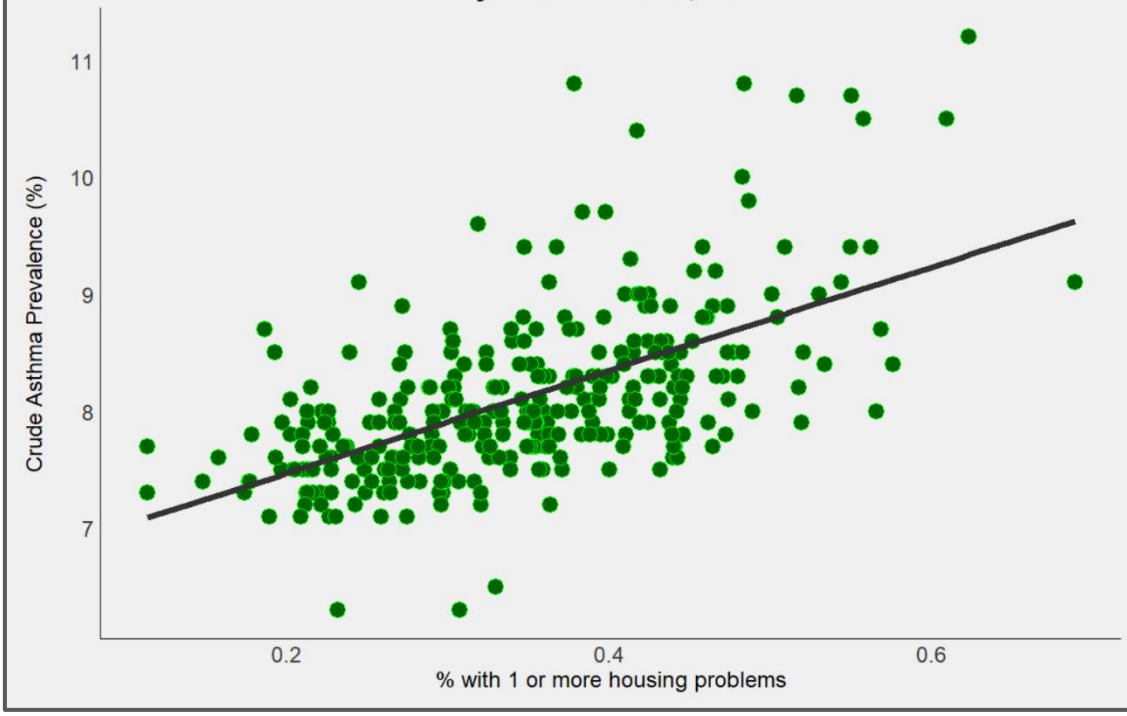
Poverty is also a major challenge in San Antonio/Bexar County. The U.S. Census has previously ranked the San Antonio – New Braunfels MSA as highest in poverty among the 25 most populous US MSAs. As outlined in San Antonio's Status of Poverty Report,[7] San Antonio consistently has a higher poverty rate than Texas and US overall, year after year. An important asthma risk factor that is strongly determined by poverty is housing. Inadequate housing is defined according to criteria such as lack of piped water or electricity, major water leaks, holes in floors/walls/ ceilings, or structural issues.

Substandard housing conditions such as these often lead to or are associated with greater exposure to common asthma triggers such as cockroaches, dust mites, mold, and rodents. In addition, housing tenure (owned vs. rented), housing cost burden, and housing stability have also proven to be highly relevant to asthma outcomes.[8,9]

The Comprehensive Housing Affordability Strategy (CHAS) from the U.S. Census Bureau and Department of Housing Development (HUD) provides census tract-level data on percentage of households with at least one of the four following "housing problems": incomplete kitchen facilities, incomplete plumbing, more than 1 person per room, housing cost burden >30%.

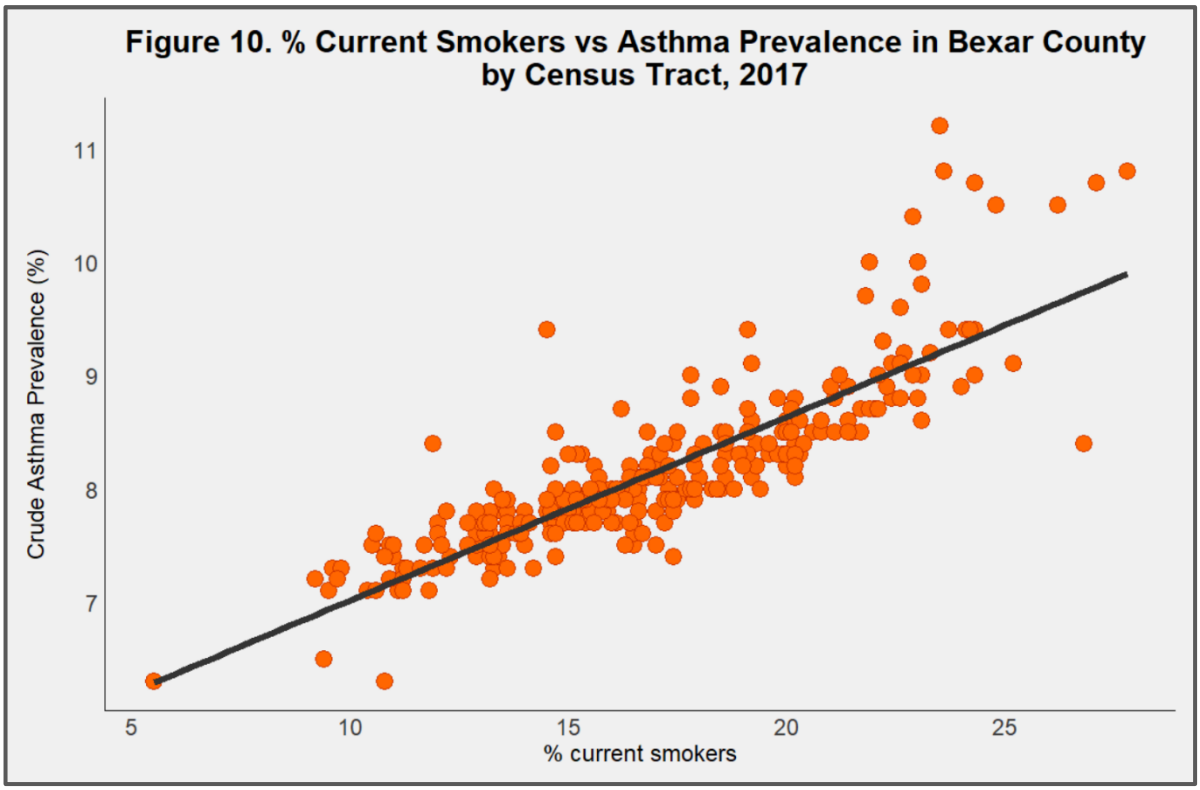
Census tract data for San Antonio shows that presence of housing problems is positively correlated with asthma prevalence: census tracts that have a higher percentage of housing with 1 or more problems are more likely to have a higher prevalence of adult asthma (**Figure 9**).

Figure 9. Housing Problems vs Asthma Prevalence in Bexar County by Census Tract, 2017



Finally, exposure to tobacco smoke is a major asthma risk factor. Aside from the harm that smoking can cause a smoker, second and thirdhand exposure to smoke can trigger and exacerbate asthma and are of major concern in indoor spaces. Harmful chemicals and substances from second and thirdhand smoke accumulate and cling to surfaces including clothes, furniture, and drapes. Thus, aside from inhalation, exposure via swallowing or touch also poses major risk, particularly where young children and toddlers are concerned. The AAFA recommends increasing the number of smoke-free spaces as one way that cities can help reduce asthma rates.

In San Antonio, the prevalence of smoking is strongly correlated with the prevalence of asthma: Census tracts that have a higher percentage of smokers also have a higher prevalence of asthma (**Figure 10**).



The correlation seen above in Figure 10 is also visually discernible by looking at census tract – level maps of smoking prevalence and asthma prevalence side by side. Most of the darkest-colored census tracts (high smoking) in the left map (**Figure 11**) perfectly match with the darkest-color census tracts (high asthma) in the right map (**Figure 12**).

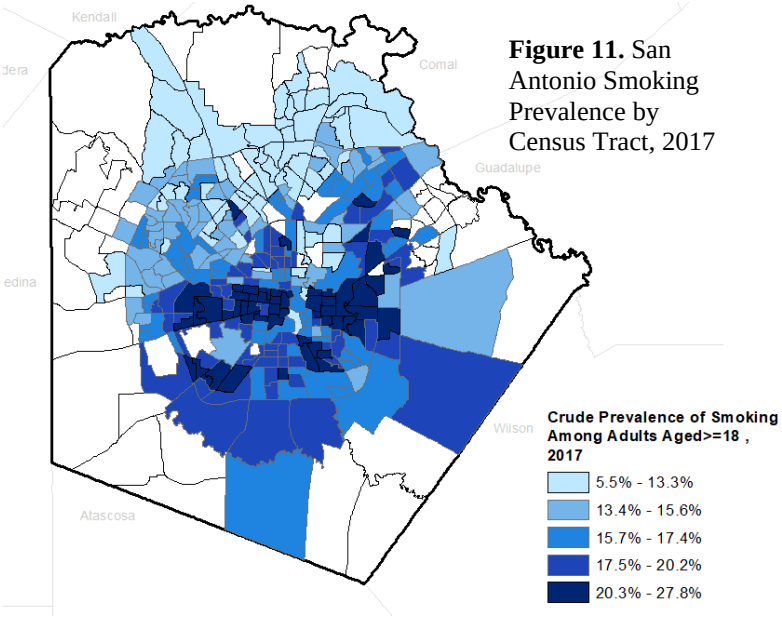


Figure 11. San Antonio Smoking Prevalence by Census Tract, 2017

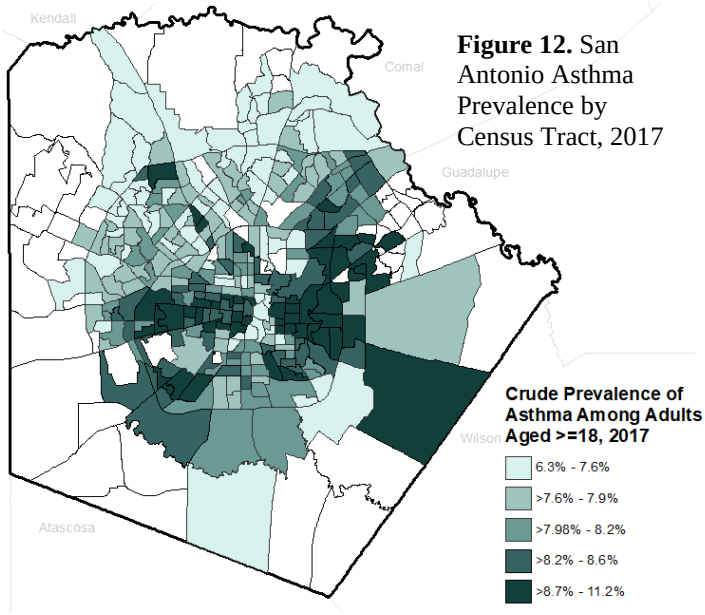


Figure 12. San Antonio Asthma Prevalence by Census Tract, 2017

Figure 13. Bexar County Pediatric Asthma Hospitalization Rate by Zip Code, averaged from 2016-2018

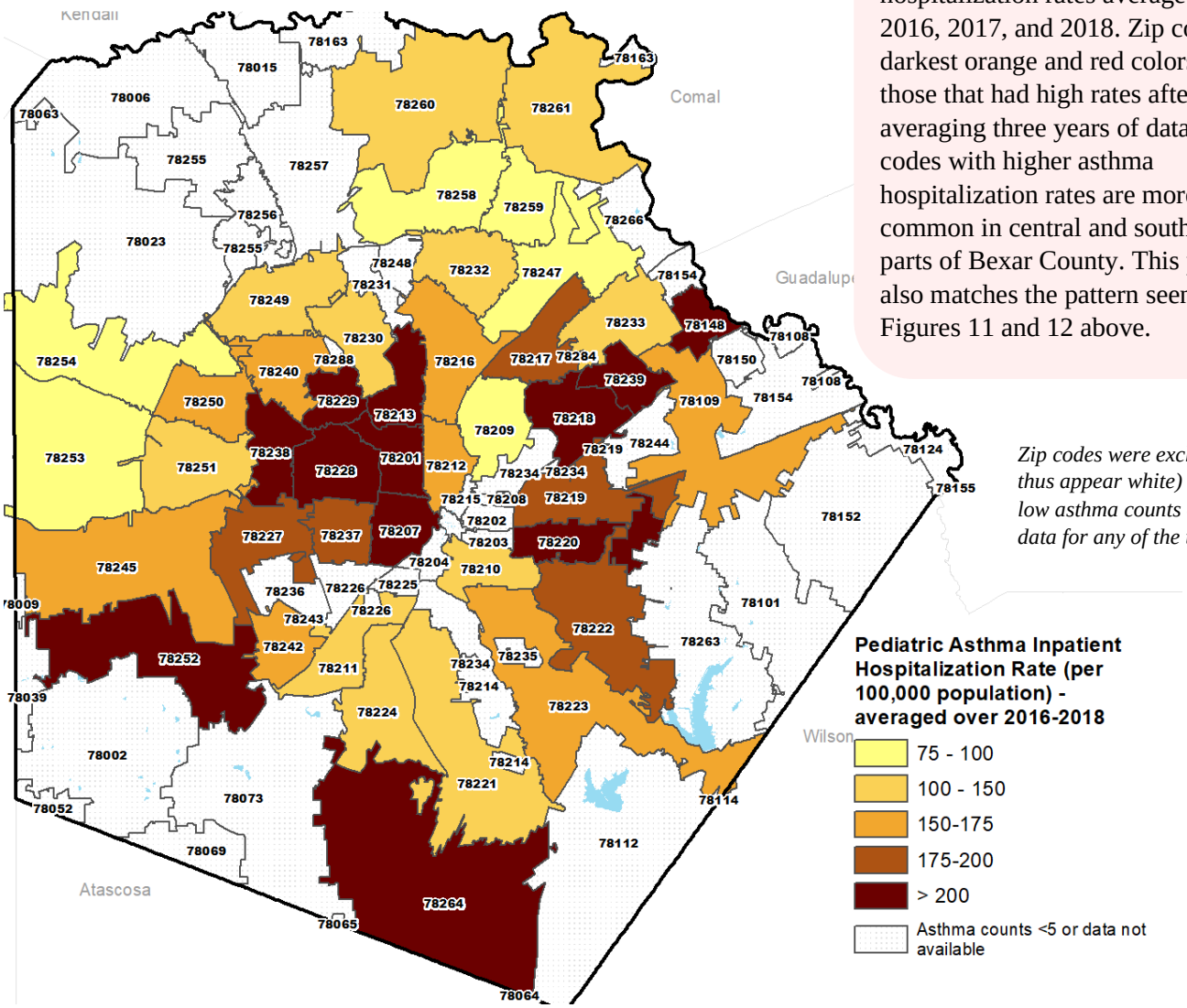


Figure 13 shows pediatric asthma hospitalization rates averaged over 2016, 2017, and 2018. Zip codes in darkest orange and red colors are those that had high rates after averaging three years of data. Zip codes with higher asthma hospitalization rates are more common in central and southern parts of Bexar County. This pattern also matches the pattern seen in Figures 11 and 12 above.

Zip codes were excluded (and thus appear white) if there were low asthma counts or unavailable data for any of the three years).

Policy Recommendations based on Report Findings

Support continuous/uninterrupted enrollment in Medicaid/Children's Health Insurance Plan (CHIP)

While most states conduct Medicaid eligibility for families with children only once a year at re-enrollment, Texas does this multiple times a year by checking multiple databases for income changes in households with children on Medicaid. Families deemed not to pass income checks have 10 days to compile and mail all necessary verification documentation. This process leads to thousands of children being abruptly kicked off the program each year, and routinely puts an unnecessary burden on families that need the coverage the most. More than half of children kicked off regain coverage within 12 months. Many children are still eligible but are kicked off the program prematurely, or due to administrative errors and procedural issues that arise as part of this cumbersome, iterative process. There is gaining momentum to pass bills that give Texas children continuous coverage across the year, with no income checks in the interim.

Support programs that emphasize and facilitate home repairs and asthma trigger remediation.

An increasing number of programs are taking a multifaceted approach to asthma reduction and prevention by bridging clinical, educational, environmental, and legal services.[3] Examples include programs in which trained health educators, nurses, or community health workers (CHWs) assess housing conditions, provide remediation supplies for household triggers, and refer clients to legal services. These programs can be strengthened further by placing more focus on medicolegal partnerships, where physicians and CHWs directly connect patients and vulnerable populations with housing attorneys. Programs can also place more focus on facilitating enrollment and reimbursement for home repair. A successful example is the Children's Hospital of Philadelphia's Community Asthma Prevention Program, which includes a Home Repairs component that provides enhanced home remediation for those most vulnerable.[3] Between 2010-2014, the program reduced West Philadelphia's asthma ED visits by 62% and asthma hospitalizations by 70%.

SA Kids B.R.E.A.T.H.E.

Building Relationships, Effective ASTHMA Teaching in Home Environments

Initiated in 2019, San Antonio's SA Kids BREATHE program provides no-cost services to eligible families. Certified Asthma Educators and CHWs assess household asthma triggers, provide asthma education, make referrals to community resources, and also connect with the primary care provider and school nurse of the children. A 12-month follow-up also takes place to ensure the family is getting what it needs.

Support policies that increase smoke-free environments

Policies that address smoking in indoor settings such as multi-unit housing structures are particularly important. Secondhand smoke is linked with more than 40,000 deaths among non-smoking adults and 400 infant deaths each year.[10] Secondhand smoke can spread throughout building halls, stairways, ventilation systems, and pipes. This means that all those living in the building have no choice but to 'share the air'. A 2015 report from the CDC found that 1 in 3 nonsmokers who live in rental housing are exposed to secondhand smoke, as are 2 in 5 children. Other studies found that 50% of multi-unit housing residents that do not allow smoking in their home still experience secondhand smoke infiltration in their home from elsewhere in the building.[11] Dozens of cities and counties have adopted local laws requiring all multi-unit housing to be smoke-free.[12] Adopting smoke-free policies will not only help alleviate asthma but will also have a beneficial impact on the many other health conditions that smoking contributes to or worsens, such as heart disease, diabetes, cancer, COPD, and allergies.

Report produced by San Antonio Metro Health's Informatics Unit. Authors: Maciel Ugalde, PhD; Golareh Agha, PhD.

Data sources: Asthma prevalence: Behavioral Risk Factor Surveillance System Survey Data, Centers for Disease Control and Prevention. Asthma prevalence by census tract: 500 Cities Project (CDC), 2017 data released in 2019. Asthma hospitalization: Texas Hospital Inpatient Discharge Public Use Data File, Texas Department of State Health Services; ICD-10 diagnosis codes used: J45. Housing problems: US Department of Housing and Urban Development: Comprehensive Housing Affordability Strategy (CHAS) data, 2013-2017 period data released in 2020. Insurance status by census tract: US Census American Community Survey (ACS) 2017 5-year estimates, table S2701. Population denominators: US Census American Community Survey (ACS): Tables B01001 and DP05 (2017, 2018, or 2019 data used where appropriate).

References: **1)** CDC.gov. (2019). CDC - Asthma. https://www.cdc.gov/asthma/default.htm. **2)** Nurmagambetov et al. The Economic Burden of Asthma in the United States, 2008-2013. Ann Am Thorac Soc. 2018: 15 (3): 348. **3)** Asthma and Allergy Foundation of America, (2020). [Asthma Disparities in America: A Roadmap to Reducing Burden on Racial and Ethnic Minorities]. aafa.org/asthmadisparities. **4)** Asthma and Allergy Foundation of America. Asthma Capitals 2019: The Most Challenging Places to Live with Asthma. https://www.aafa.org/asthma-capitals/. **5)** Asthma and Allergy Foundation of America. My Life with Asthma, 2017. https://www.aafa.org/my-life-with-asthma-report/. **6)** CDC. Asthma Facts: CDC's National Asthma Control Program Grantees. July 2013.http://www.cdc.gov/asthma/pdfs/asthma_facts_program_grantees.pdf. **7)** Status of Poverty in San Antonio, 2019. https://www.sanantonio.gov/Portals/0/Files/HumanServices/FaithBased/2019PovertyReport.pdf. **8)** Hughes et al. (2017). Pediatric asthma health disparities: Race, hardship, housing, and asthma in a national survey. Academic Pediatrics, 17(2), 127–134. **9)** Beck et al (2014). Housing code violation density associated with emergency department and hospital use by children with asthma. Health affairs (Project Hope), 33(11), 1993–2002. https://doi.org/10.1377/hlthaff.2014.0496. **10)** The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General, 2014. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014. **11)** Licht et al. (2012). Attitudes, experiences, and acceptance of smokefree policies among U.S. multiunit housing residents. Am J Public Health, 102, 1868–1871. **12)** https://www.changelabsolutions.org/sites/default/files/RentControl_Fact_Sheet_FINAL_Updated_20160421.pdf