

# San Antonio Regional Differences in the Incidence of Type 1 vs. Type 2 Pediatric Diabetes

M. Khan, DO<sup>1</sup>; A. Vosberg<sup>1</sup>; J. Guerra, MPH<sup>2</sup>; M. Zozus, Ph.D<sup>3</sup>; M. Rayas, MD<sup>1</sup>; J. Lynch, MD<sup>1</sup>; G. Agha, Ph.D<sup>2</sup>

<sup>1</sup>Pediatric Endocrinology, University of Texas Health San Antonio (UTHSA)

<sup>2</sup>San Antonio Metropolitan Health District, San Antonio, TX

<sup>3</sup>UT Health Department of Population Health Sciences, Division of Clinical Research Informatics



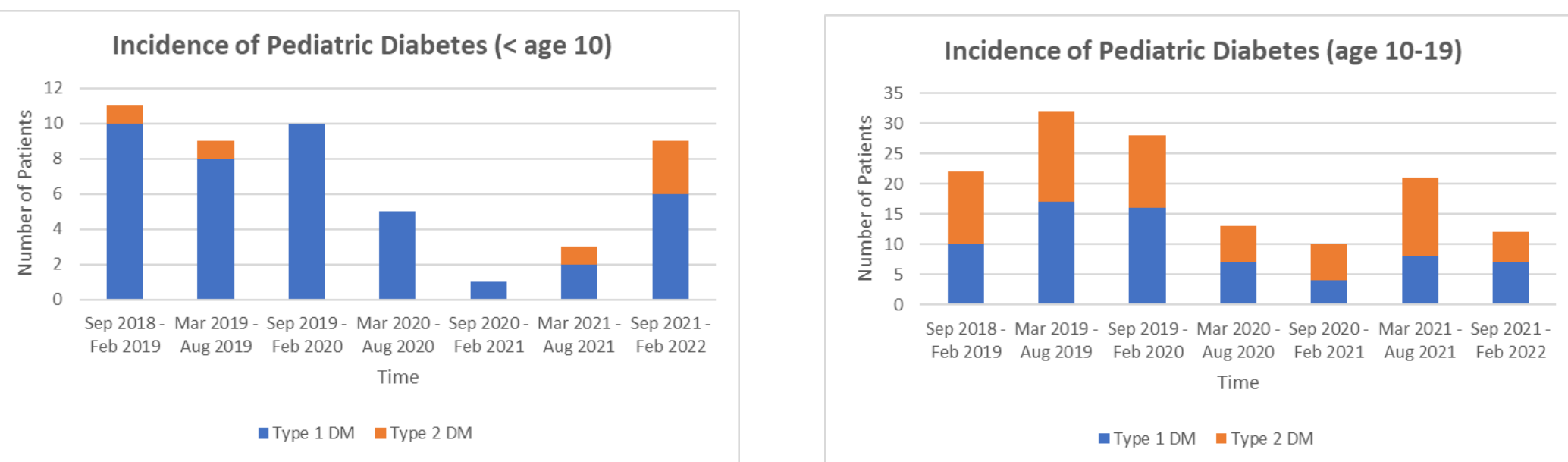
## Introduction

Previous studies have shown an increase in the national rates of both pediatric Type 1 (T1D) and Type 2 diabetes (T2D)<sup>1</sup>. However, obtaining accurate regional and national data on pediatric trends has been challenging. Early onset T2D is associated with a high risk of comorbidities, and the projections for diabetes in San Antonio continue to rise<sup>2,3</sup>. There is an urgent need for evidence based pediatric diabetes incidence trends to inform outreach, intervention, and research efforts. In this study, in collaboration with San Antonio Metropolitan Health (Metro Health), we aimed to both characterize and geographically evaluate new onset T1D and T2D in San Antonio.

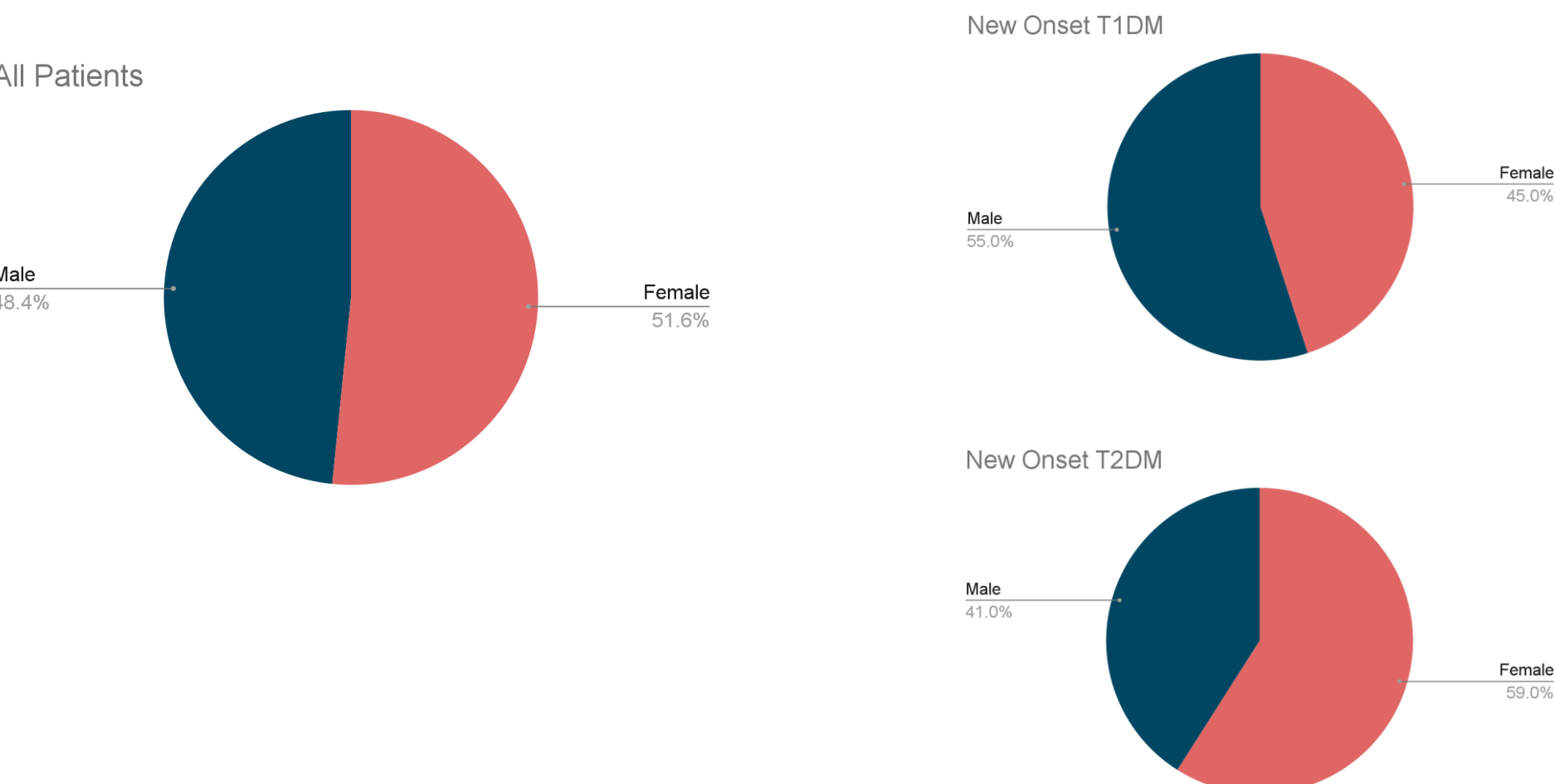
## Materials and Methods

Pediatric patients with new onset diabetes from 2019 to 2021 were manually tracked and characterized. This data was compiled into a HIPAA compliant internal database. De-identified patient data was shared with Metro Health epidemiologists to enable geo-mapping of trends in Bexar County San Antonio using patients' home zip codes. Statistical analyses included unpaired t-testing and Spearman's correlation calculations.

## Results



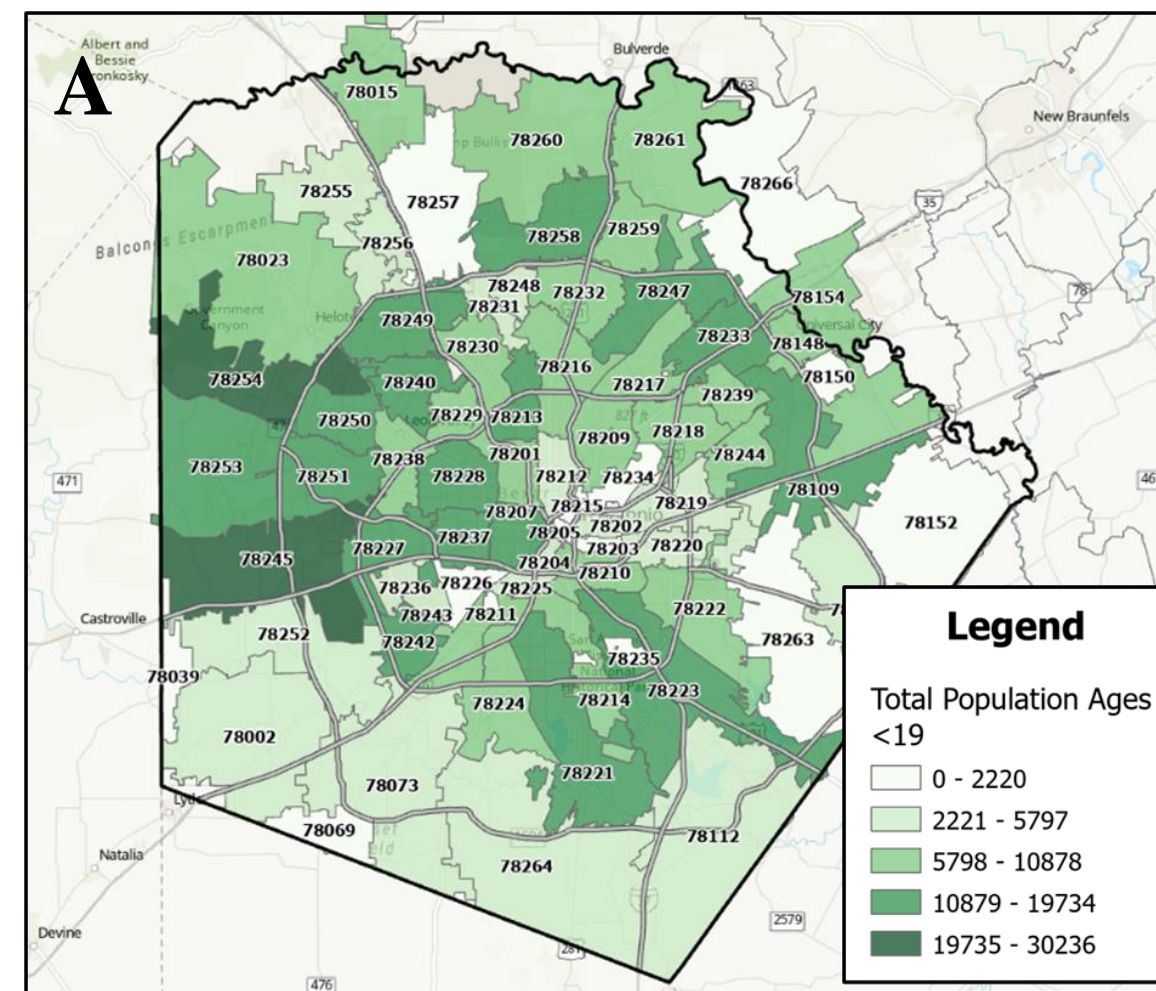
**Figure 1:** Incidence of Pediatric Diabetes Divided by Age and 6-month intervals. In patients age > 10, exactly 50% had T1D vs T2D



**Figure 2:** New onset diabetes divided by sex and diabetes type.

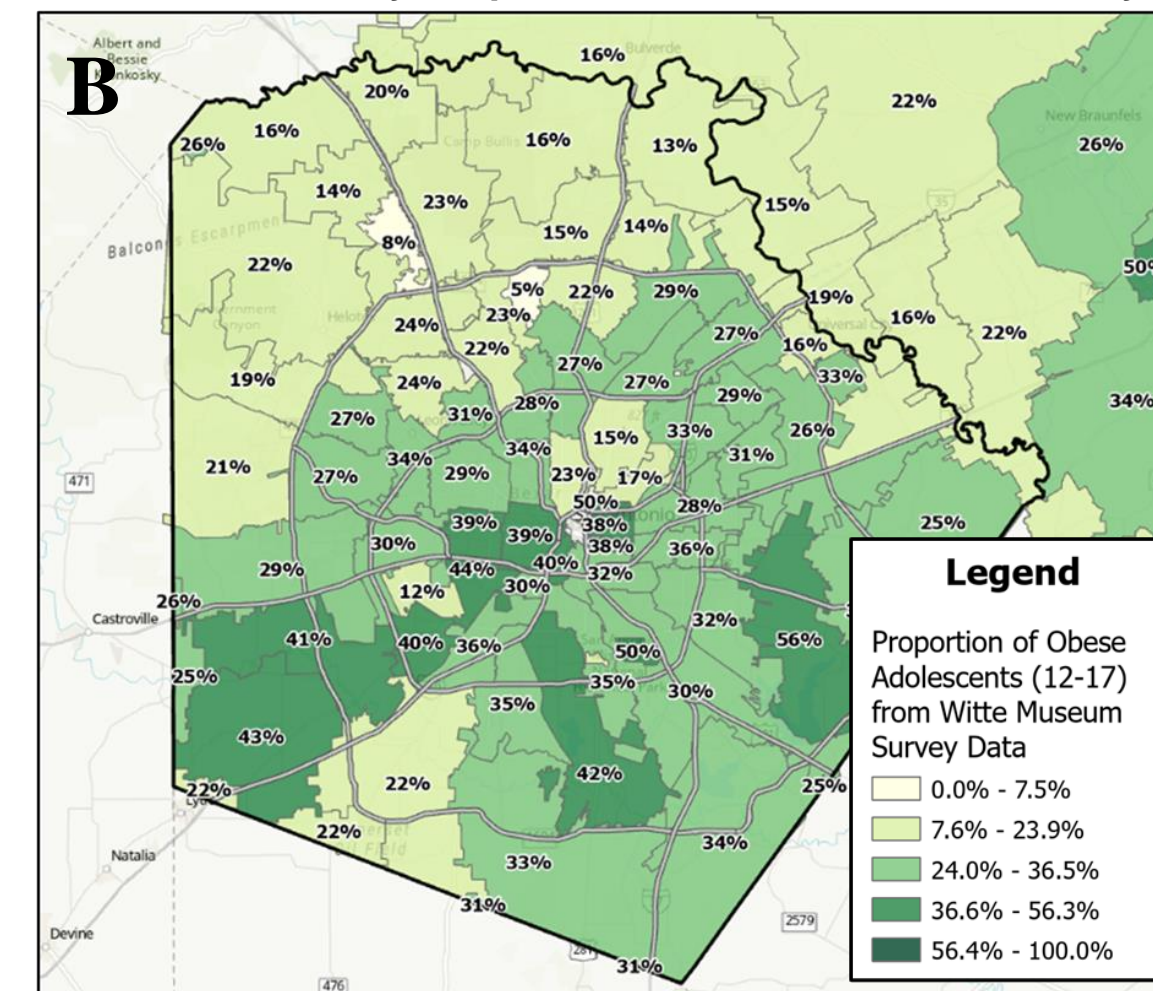
## Results

**Pediatric (Age <19) Population Estimates in Bexar County**



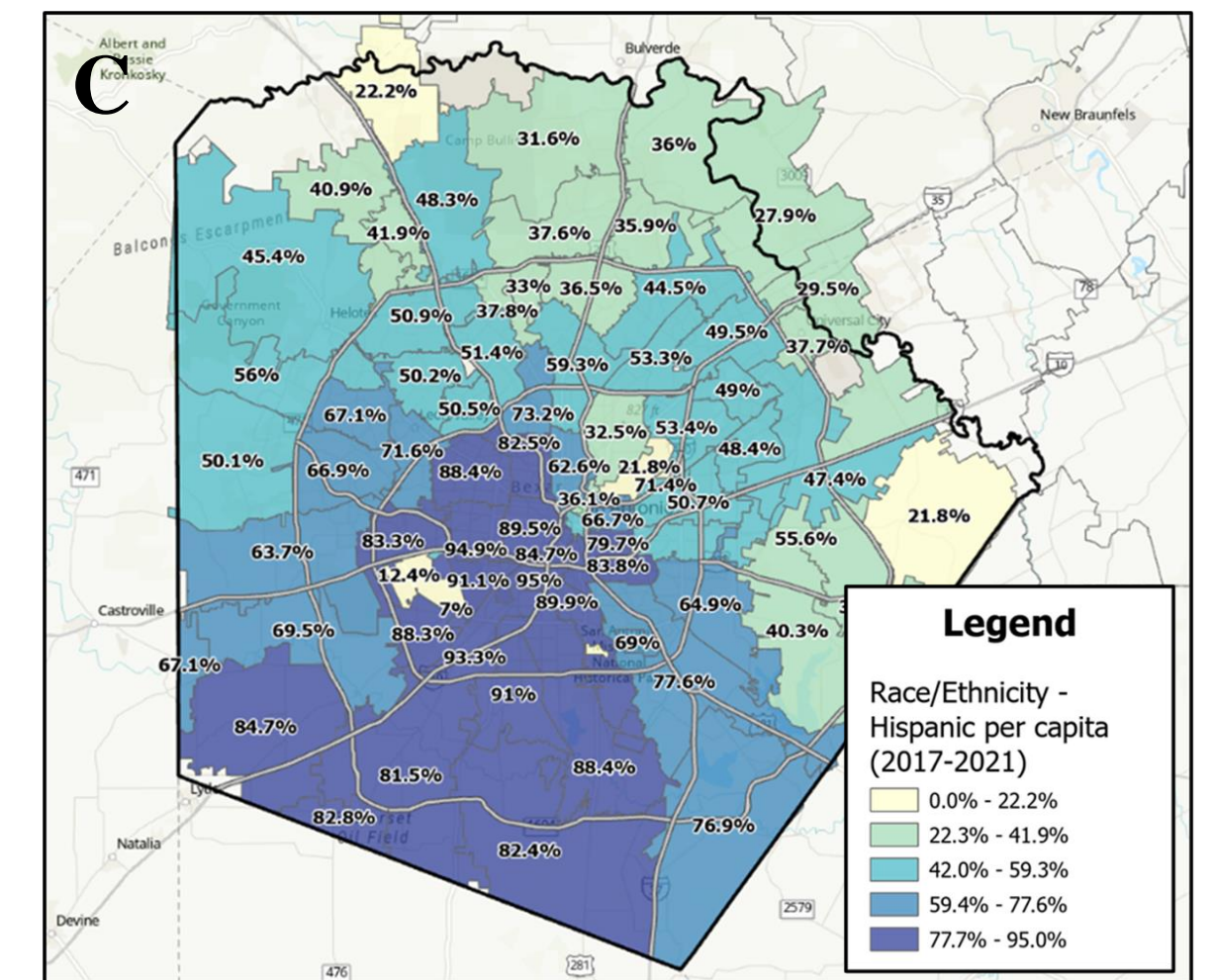
Source: 2017-2021 ACS

**Pediatric Obesity Proportion Estimates in Bexar County**



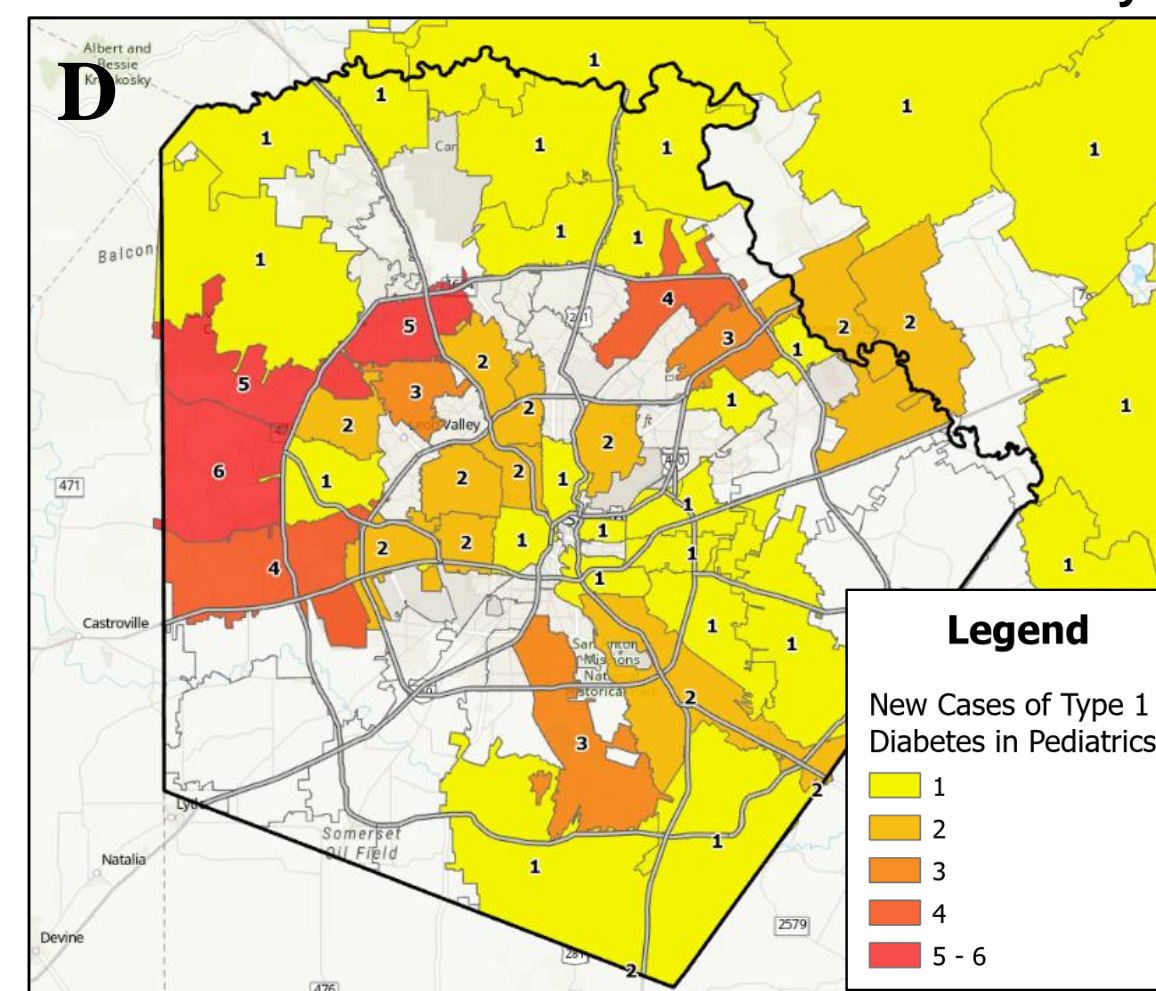
Source: 2014-2018 Witte Body Adventure Exhibit Data

**Pediatric Obesity Proportion Estimates in Bexar County**



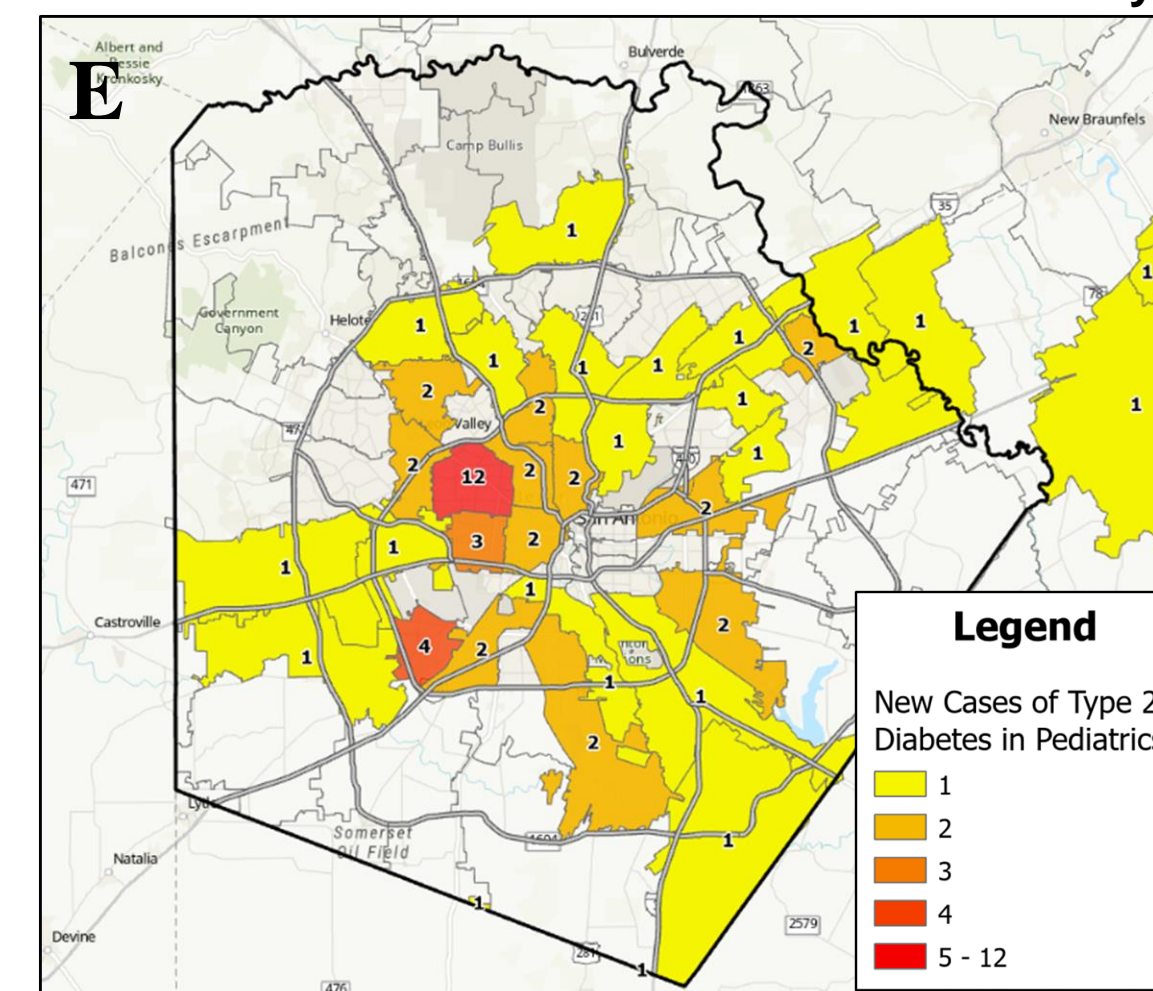
Source: 2017-2021 ACS

**Pediatric T1D Incidence Cases in Bexar County**



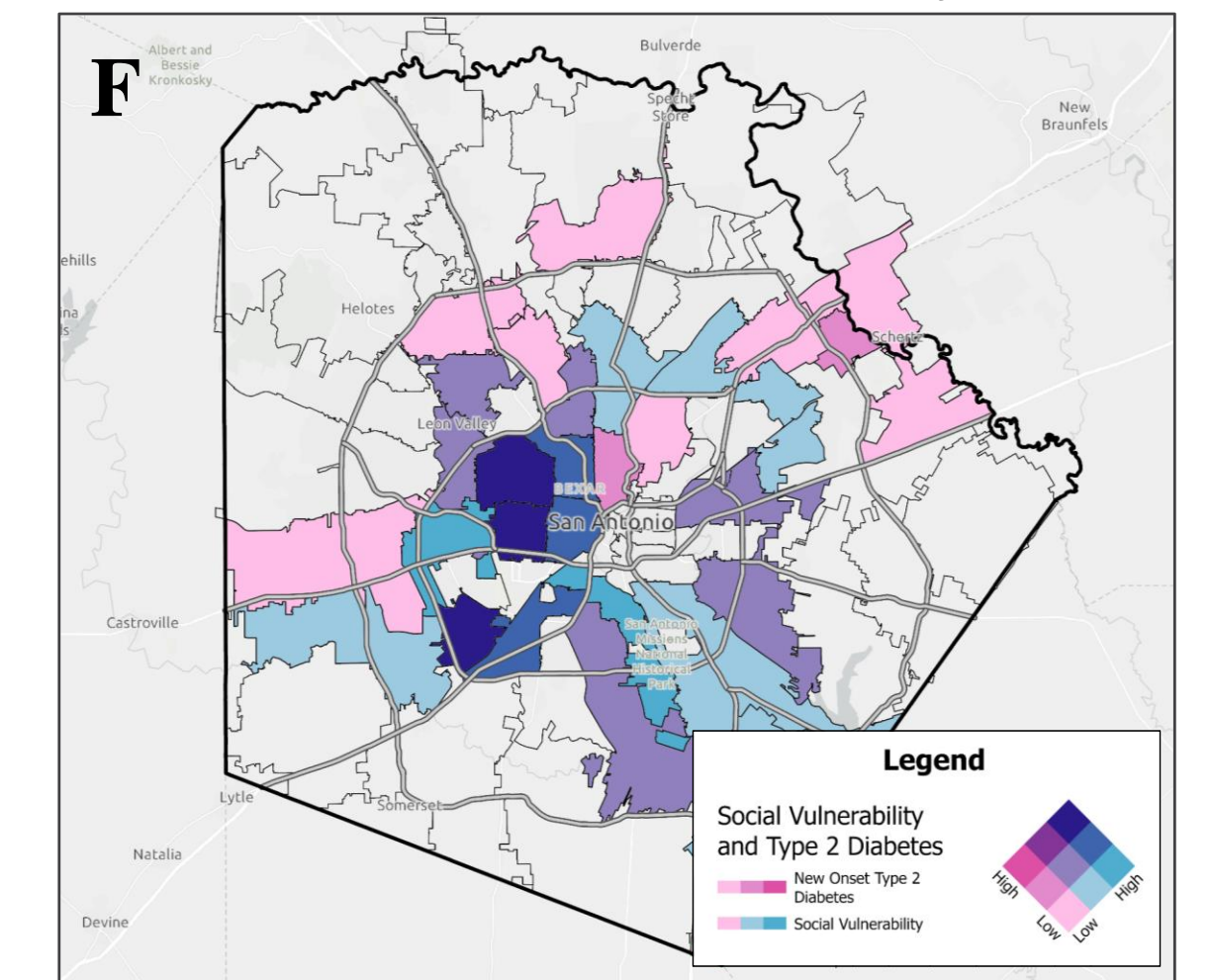
Source: 2018-2021 UT Health San Antonio Incidence Data

**Pediatric T2D Incidence Cases in Bexar County**



Source: 2018-2021 UT Health San Antonio Incidence Data

**T2DM vs. Social Vulnerability**



**Figure 3:** Geo-mapped Trends of Pediatric Diabetes in Bexar County, San Antonio: Graphs A-C represent pediatric population (age < 19) estimates, pediatric obesity estimates, and proportion Hispanic population in San Antonio respectively. Graph D is a representation of the distribution of T1D in Bexar County. Graph E is a representation T2D in Bexar County. Graph F demonstrates the social vulnerability score, which is comprised of the percent of the population that is non-white and median household income. There was a moderate direct relationship (Spearman's correlation 0.444) between T2D and social vulnerability.

## Discussion

Important statistical data on local T1D and T2D pediatric trends was obtained via this research effort. Despite challenges and limited resources to support manual data collection during a pandemic, these collaborative efforts have enabled mapping of diabetes incidence with detailed results by zip code and social determinants of health. Our pilot project highlights both the value and need for an accurate and comprehensive pediatric diabetes database.

## Conclusion

The creation of this preliminary database and continued collaboration with Metro Health and UT biostatisticians provides the foundation for more sophisticated investigations regarding characterization of pediatric diabetes patients in our region.

## References

1. Dabelea, Dana et al. "Twenty years of pediatric diabetes surveillance: what do we know and why it matters." *Annals of the New York Academy of Sciences* vol. 1495,1 (2021)
2. Danaei G, Friedman AB, Oza S, Murray CJ, Ezzati M. Diabetes prevalence and diagnosis in US states: analysis of health surveys. *Popul Health Metr*. 2009 Sep 25
3. SEARCH for Diabetes in Youth Study Group. "The burden of diabetes mellitus among US youth: prevalence estimates from the SEARCH for Diabetes in Youth Study." *Pediatrics* 118.4 (2006): 1510-1518