



TCID Efforts to Shape TB Care

Jackson Smith, MPH, CPT, CHW

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Has the following disclosures to make:

- No conflict of interests
- No relevant financial relationships with any commercial companies pertaining to this activity

Texas Center for Infectious Disease (TCID)

TCID is the only specialized Tuberculosis hospital in the United States. This facility serves TB patients in Texas and provides patients with support to improve their health and quality of life during their hospital stay. We utilize a growing public health internship program to bring awareness to our mission and TB



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Methods of Outreach

Implementation of a strategic marketing plan allowed us to promote the public health internship program at a larger scale. Using promotional materials, I utilized community-based events to locate interested individuals.

- Open volunteering and shadowing opportunities on campus
 - Non-profit group volunteering experiences
 - University shadowing opportunities and tours
- Attended local medical and university Public Health and Engagement fairs



Results

As we began to market the public health internship, we saw rapid growth in the past year. We saw marked improvement as of Spring 2025 when I began overseeing the program.



Our amazing support



Community Relations: Spring Public Health Interns



Dr. Ayesha Saleem
Clinical Research Coordinator



Mariana Morin
Patient Activities Lead



Audrie Torres
Clinical Research



Crystal Reeves
Community Relations Practicum Student



Alayna Booc
Patient Activities



Mrunmayee Phadke
Clinical Research



Angelina Sopheap
Clinical Research



Paulina Dominguez
Patient Activities



Maya Reed
Data Analysis Lead



Daniela Barrera
Community Outreach



Chardonay Cooper
Clinical Research



Mithra Cama
Data Analysis



Chasity Thomas
Clinical Research



Texas Department of State Health Services



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Statewide Impact

- UT San Antonio
- UT Health Science Center San Antonio
- University of Incarnate Word
- Texas A&M San Antonio
- St. Philips College
- UT Austin
- Texas A&M College Station
- Texas State
- UT Health Science Center Houston
- Thomas Moore University
- Grand Canyon University



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Data Visualization Team



Maya Reed **Summer 2025**

Maya Reed is a student at the University of Texas at Austin pursuing a degree in computational biology. She has been a crucial part of our research team as she has been leading statistical analysis on all projects. She helped develop our Social Vulnerability Index (SVI) poster that has been successfully accepted at multiple conferences globally.

Mithra Cama **Spring 2026**

Mithra Cama is a student at the University of Texas at Austin pursuing majors in Economics and Mathematics and a minor in Statistics and Data Science. Her love for numbers has grown to a passion for using data to support informed decision making. She is motivated by work that helps people and improves real outcomes, and she hopes to support efforts focused on prevention, intervention, and equitable care.



Comparing Social Vulnerability in Tuberculosis Patients Across Texas



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Jackson Smith, Maya Reed, Abigail Hernandez, Ace Olano

Texas Department of State Health Services, Texas Center of Infectious Diseases

Introduction

The Texas Center for Infectious Disease (TCID) is the only Tuberculosis (TB) hospital located within the United States. While Tuberculosis rates have fluctuated over the past few decades, Texas has seen a steady increase in TB cases since the COVID-19 pandemic. Texans most at risk for TB are those who may be faced with social factors such as lack of insurance, lack of stable housing, mental health illness, substance use, or being born outside of the US. The Social Vulnerability Index (SVI) is a tool developed by the Centers for Disease Control (CDC) to quantify and identify communities that may be more vulnerable to social and environmental hazards. The SVI score is determined by factors such as socioeconomic status, housing status, ethnic origin, and other demographic data. TCID theorized that there may be a correlation between the incidence rates of tuberculosis

in Texas and the social vulnerability of the reporting county.

Methods

2022 Tuberculosis case data from DSHS public records was collected in Excel, was cleaned and categorized by Texas county and Public Health Region. GeoJSON files generated a heatmap of 2022 CDC SVI scores across Texas.

Using Python, Statistical Regression Analysis was performed to evaluate the relationship between homelessness, foreign-born status, and ethnic minority.

The bar graph in Figure 1 details the county with the highest TB burden in its respective DSHS region, while the corresponding graph highlights the SVI score of that county.



Results

The heatmaps of 2022 SVI Scores indicated a correlation between referrals in major metropolitan areas and the SVI Score. Yet, border counties, despite high SVI, had lower referral rates among the TCID population.

Multilinear regressions showed significant associations between TB and factors such as:

- Homelessness (p < 0.05)
- Foreign-Born (p < 0.01)
- Ethnic Minority (p < 0.05)

The negative coefficient for Foreign-Born Status indicates an inverse relationship between SVI and foreign status among the TCID patient population. By illustrating a Bar and Line graph, comparative analysis revealed that counties with high SVI often had higher cases of TB, suggesting correlations between TB incidence rates and SVI scores.

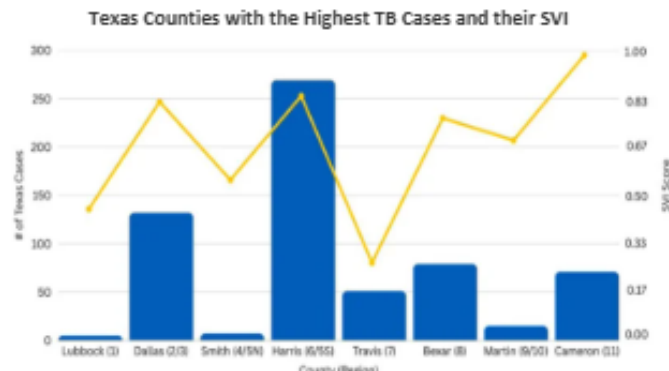


Figure 1: Bar graph depicting the total Tuberculosis cases of counties with the highest number of cases per Texas region and their corresponding SVI represented by the line graph.

Social Vulnerability Index by Texas County -2022



Figure 2: Heat Map of SVI Scores for every county in Texas as of 2022.

Predictor Variables	P- Value	Coefficient
Homelessness	0.102	0.1169
Foreign Born	0.002	- 0.2264
Ethnic Minority	0.003	0.1169

Table 1. Multi-Regression Results for Socio-demographics of Tuberculosis in Texas for 2023.

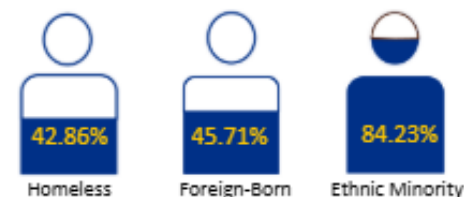


Figure 3: Illustrations of Patient population Socio-demographics at the Texas Center for Infectious Disease for 2023.

Conclusion

Future Directions



The findings from this project will help inform public health care serving underserved populations. The results underscore the significance of health on community well-being. By identifying a correlation between TB and social risk factors, we gain insight into the social risk factors that contribute to the spread of airborne TB. Significant associations between TB and homelessness, foreign-born status, and ethnic minority suggest a need for education and training for tackling preventative services among these population groups. TCID can utilize this new information to:

- Promote culturally significant health education material to the public
- Curate a curriculum for healthcare providers to address barriers to care in TB treatment
- Locate counties with high TB burden but minimal TCID referral and provide education on available assistance programs
- Develop TCID hospital-wide policies to ensure all patient care includes detailed methods to address social determinants of health

ACCEPTED AT 6 CONFERENCES

TCID Junior Board

High School Students, who help support the Volunteer Service Council (VSC) through volunteering and event coordinating. This club meets monthly to learn from a new TB specialist and discuss how they can give back to the patients. They have fundraised, ran TB awareness campaigns, and brought smiles to our community.

- San Antonio School Represented:
 - Brandeis
 - Basis Charter
 - Madison



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TCID Internship Impact

Patient Activities

- Brought outside organizations such as dance groups and San Antonio zoo to entertain campus
- Provided spiritual, artistic, physical and educational courses to our patients
- Established official partnerships with universities to expand our services

Community Outreach

- Creation of our social media presence
- Assisted non-profit with marketing and fundraising
- Creation of health education and promotion materials

Clinical Research

- Created research and case study posters that have been displayed globally
- Assisted physicians with drafting manuscript and case studies for publication
- Creation of interactive GIS mapping of TB patients



Sharing Their Stories



Mariana Morin

Spring 2025



Ariel Villasenor-urgo

Summer 2025



Audrie Torres

Fall 2025



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