



Research Question

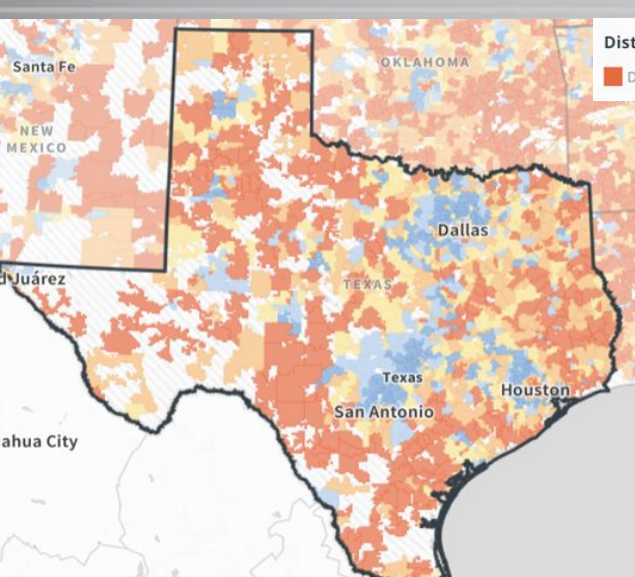
Among pediatric patients (0–24 years) presenting to community-based emergency departments in Texas with a TDI in 2023, what is the prevalence of TDIs when stratified by levels of socioeconomic distress (as measured by the Distressed Community Index), and which demographic or community-level factors are associated with these injuries?

BACKGROUND

Traumatic dental injuries (TDIs) refer to impact-related damage to teeth and surrounding oral structures. TDIs represent a significant yet under-recognized public health burden, with substantial clinical, economic and psychosocial implications.

Emergency departments (EDs) increasingly serve as access points for acute dental conditions. However, little is known about how community-level socioeconomic distress influences patterns of TDI presentation.

The Distressed Community Index (DCI) provides a validated, zip-code level measure of socioeconomic vulnerability, yet has not previously been applied to dental trauma research. By identifying disparities in emergency care utilization and highlighting high-risk communities, this research aims to contribute meaningfully to oral health equity, guide targeted prevention efforts, and support evidence-based allocation of public health resources across underserved Texan populations.



'Approx. 22 percent of Texans live in communities classified as distressed - a higher proportion than the national average'
Source: Economic Innovation Group

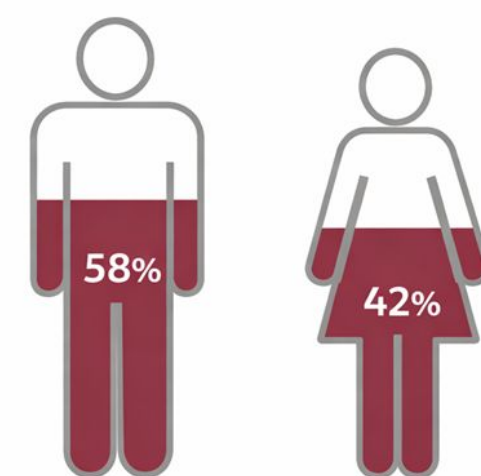
MATERIALS AND METHODS

A retrospective cross-sectional study was conducted. Data was collected through review of the Texas Emergency Department Public Use Data File (2023).

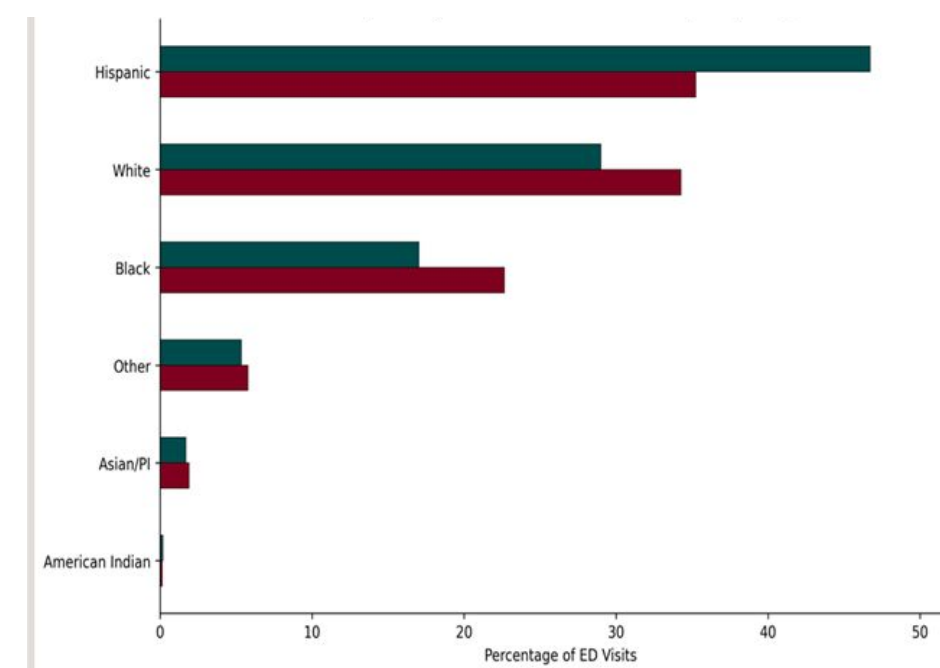
The inclusion criteria included patients that sustained a TDI (identified using ICD-10 codes K08.11, K08.41, S02.5XXA), aged 0-24yrs and a resident of state of Texas. Patients were excluded if they were missing data or were transferred from other EDs. When the inclusion criteria was applied, our sample size was 2,061 (n=2,061).

Several covariates were included to account for patient and community factors that may influence the presentation of TDIs to emergency departments such as age, gender, race/ethnicity, insurance status, total charges, source of admission, discharge status, seasonal variability. Patient zip-codes were merged with DCI data to examine the distribution of trauma-related and non-dental related conditions (NDRC) visits across levels of community distress.

Descriptive statistics were used to summarize the study population and key variables such as age, gender, ethnicity, zip-code, payor source, total charges and discharge status. Multivariable logistic regression was used to examine the association between patient zip code and the DCI.



Males demonstrated 1.72 times higher odds of TDI presentation compared to females.



After adjustment, Black patients demonstrated increased odds of TDI compared with other racial/ethnic groups. Meanwhile, Hispanic patients represented the largest absolute proportion of visits.

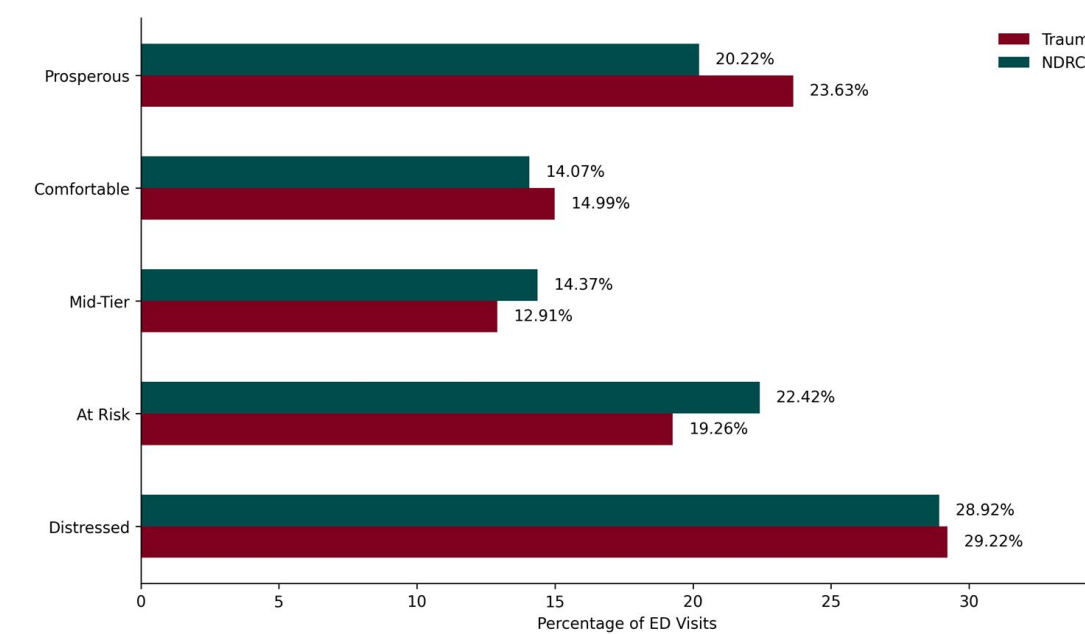
RESULTS

A total of 2,061 TDI-related emergency department (ED) visits were identified among patients aged 0–24 years in Texas in 2023, representing 0.05% of all ED visits in this age group and a population prevalence of approximately 19 per 100,000, underscores a meaningful public health burden.

Age emerged as the most powerful independent predictor. Patients aged 20–24 years demonstrated nearly 12-fold higher odds of presenting with TDI compared to younger age groups. Males demonstrated 1.72 times higher odds of TDI presentation compared to females.

Self-pay/charity patients had significantly increased odds of TDI presentation compared to private insurance or Medicaid. The median cost of a TDI-related ED visit was \$2,490.93 with an IQR of \$1,234.00 - \$7,944.81.

Descriptively, distressed communities accounted for a higher proportion of visits. However, after adjustment, DCI was not independently predictive of TDI compared to NDRC for Prosperous, Comfortable and Distressed groups.



This figure illustrates the distribution of emergency department visits across levels of community socioeconomic distress, as measured by the DCI.

DISCUSSION

This study provides the first population-level analysis of pediatric TDI presentations in Texas EDs using a community-level socioeconomic framework.

Key insights:

- Age, gender, race/ethnicity, and payor source were independently associated with TDI presentation.
- TDIs disproportionately affect young adults, males, and minority populations.
- Higher burden in distressed communities, but:
 - Not independently predictive after adjustment → reflects interaction of social, behavioral, and individual-level risk factors.

The findings suggest that ED utilization for TDI is shaped not only by injury risk, but by:

- Access to dental care
- Insurance status
- After-hours care availability
- Structural healthcare barriers

DATA SOURCE, RESULTS & REFERENCES



CONCLUSIONS

1. Disparities exist across demographic and socioeconomic groups.
2. Community-level distress contributes to patterns of presentation, but is not independently predictive.
3. Dental trauma should be understood as a multifactorial condition shaped by both individual and structural determinants.