

# Trends in Etiology of Traumatic Dentoalveolar Injuries

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## PURPOSE

To analyze temporal trends in mechanisms of TDI over a 13-year period among patients presenting to a major children's hospital to examine whether these trends differed by sex and age.

## BACKGROUND

TDI are common in children, affecting the teeth and surrounding tissues, with falls and sports as the leading causes. Patterns of injury vary by age, sex, and risk factors, and evolving behaviors may be shifting traditional trends.

## METHODS

**Design:** Retrospective chart review of pediatric patients (0–18 years) with TDI at Nationwide Children's Hospital (2012–2024); IRB-approved, consent waived

**Sample:** Included initial TDI visits with completed trauma flowsheets; excluded cases with missing MOI

**Data Collection:** Extracted from electronic health records (Epic) using SQL

- Demographics: age, sex, race, language, zip code
- Injury details: MOI, date

### Classification:

- TDI categorized as primary or permanent dentition
- MOI grouped into 15 categories (sports subdivided)

### Data Processing:

- Standardized flowsheet used for structured data
- Missing/unclear MOI flagged and manually reviewed

### Analysis:

- Descriptive statistics for demographics and injury patterns
- Negative binomial regression for temporal trends and sex differences
- Significance set at  $p < 0.05$

Table 1: Patient Demographics		
	N	%
<b>Total</b>	7147	100.00%
<b>Age (in years)</b>		
mean	7.99	
std	4.46	
min	0	
max	18	
<b>Sex</b>		
Female	2731	38.21%
Male	4416	61.79%
<b>Race</b>		
White	3531	49.41%
Black	2601	36.39%
bi-racial/multi-racial	522	7.30%
Asian	148	2.07%
Other	345	4.83%
<b>Preferred Language</b>		
English	6223	87.07%
Spanish	263	3.68%
Somali	403	5.64%
Other	258	3.61%

- Injuries increased 4.8% annually
- Slower growth: assault, bicycle, gunshot
- Lower female rates: soccer, wrestling
- Higher male rates: basketball, football

## RESULTS

Figure 1: Annual total TDI of top 4 MOI

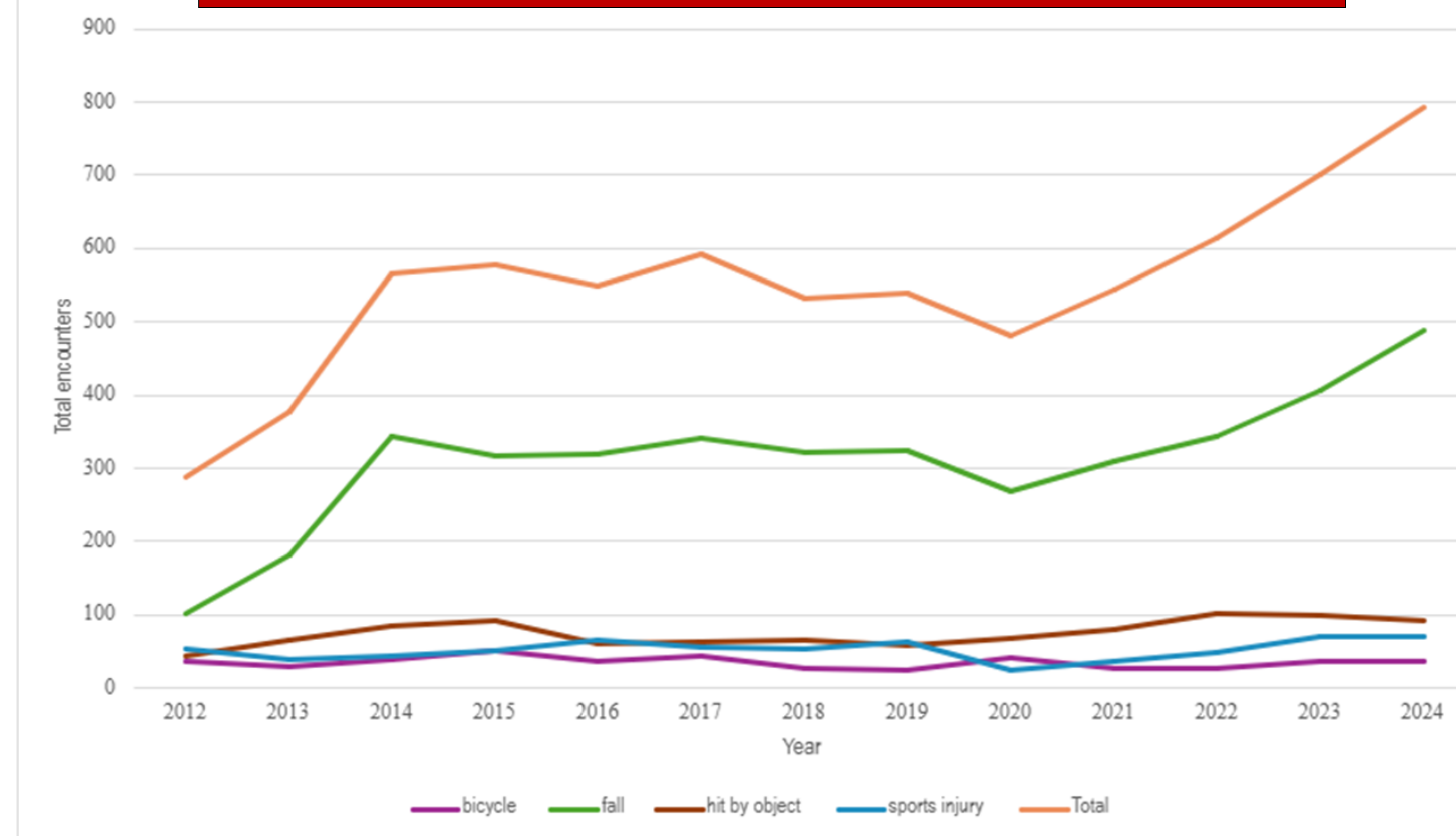


Figure 2: Annual TDI caused by Sports

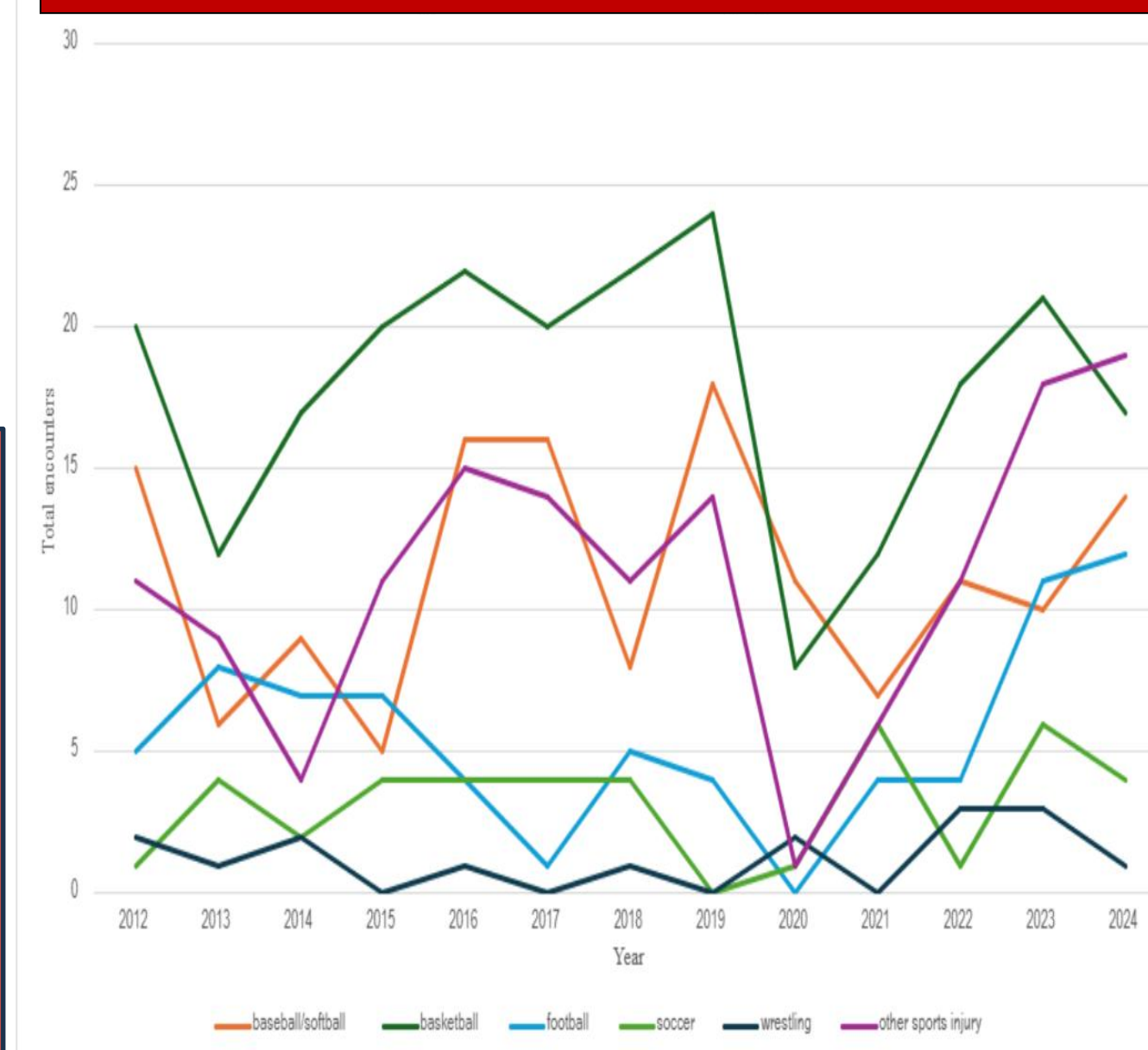
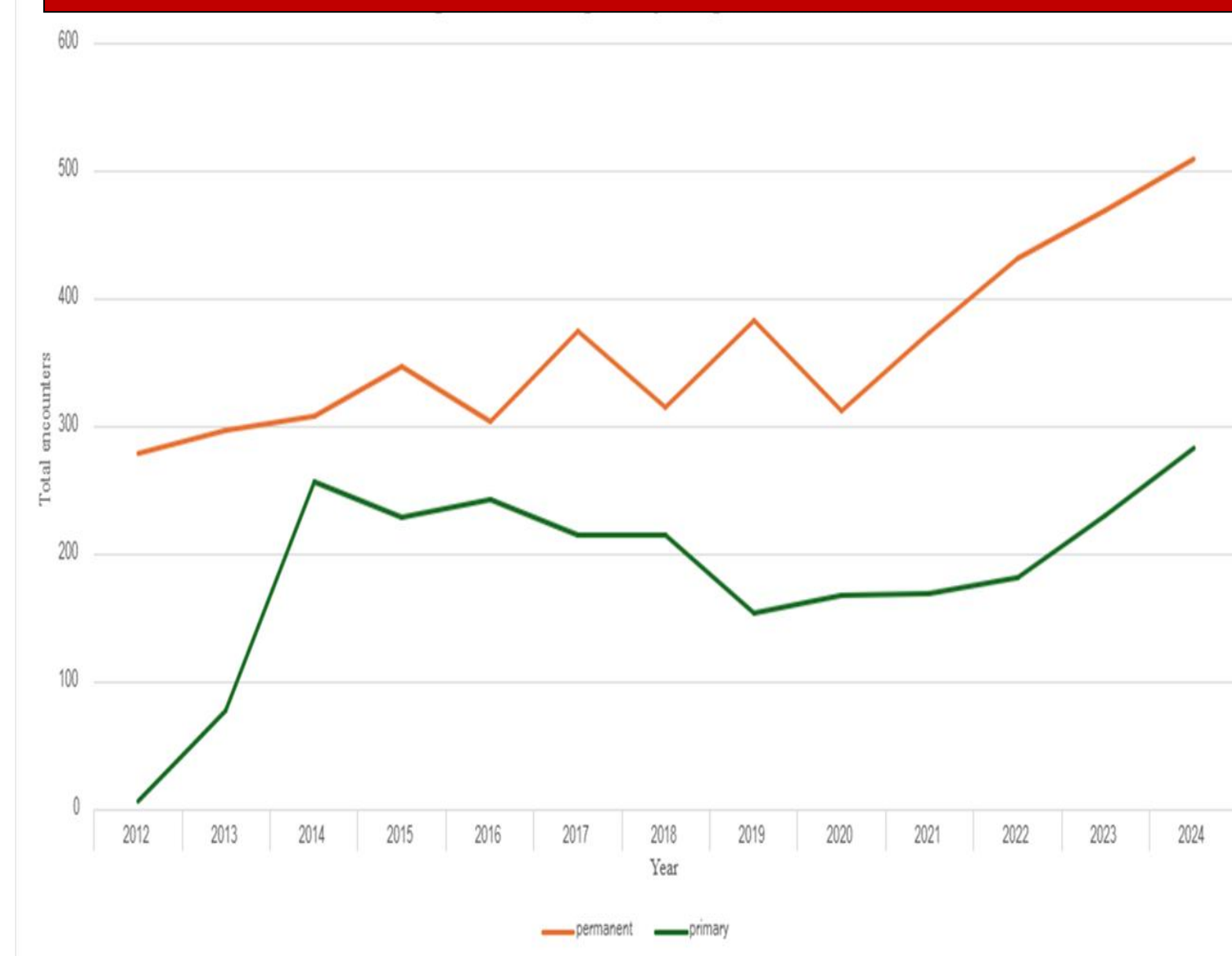


Figure 3: Annual primary and permanent TDI



## DISCUSSION

- Overall TDI cases increased over 13 years except for a decline noted in 2020 coinciding with the COVID-19 Pandemic.
- Falls were the leading mechanism.
- Males were disproportionately affected.
- Permanent teeth were most injured, reflecting age-related transitions and exposure to organized sports.
- Sports injuries, especially basketball, remained a major source of trauma.
- Emerging activities like scooters, e-scooters, and trampolines contributed modestly.
- Strengths: large, diverse cohort, long study period, standardized data collection.
- Limitations: retrospective design, potential misclassification of MOI, limited generalizability to private practice.

## CONCLUSIONS

- TDI encounters increased significantly
- Most injuries (n = 793) in 2024
- Fall was the most common MOI
- Males > females
- Basketball was #1 sports injury

## REFERENCES

