

Burden of Traumatic Pediatric Dental Emergencies on Hospital Dentistry

Jashandeep Mundi DDS, Riley Steed DDS, Aisha Bhutta, Brett Chiquet DDS PhD
University at Buffalo Department of Pediatric and Community Dentistry



Introduction

Dental trauma leads to a small, but noticeable share of pediatric emergency care. Close to 50% of children experience a dental injury before the age of 18 (Lembacher et al. 2022). In one community-based sample of preschool-age children, 47% had experienced some traumatic dental injury (Born et al. 2019). In 2018, in the United States, these injuries resulted in about 2 million dental-related ED visits. 95% of these patients ended up being treated and sent home without being admitted (Owens et al. 2018).

The aim of this study is to assess the current dental burden on the Golisano Children's Hospital of Buffalo (previously Oishei Children's Hospital) Emergency department to determine how to enhance treatment, follow up and cost-effectiveness of ED dental care.

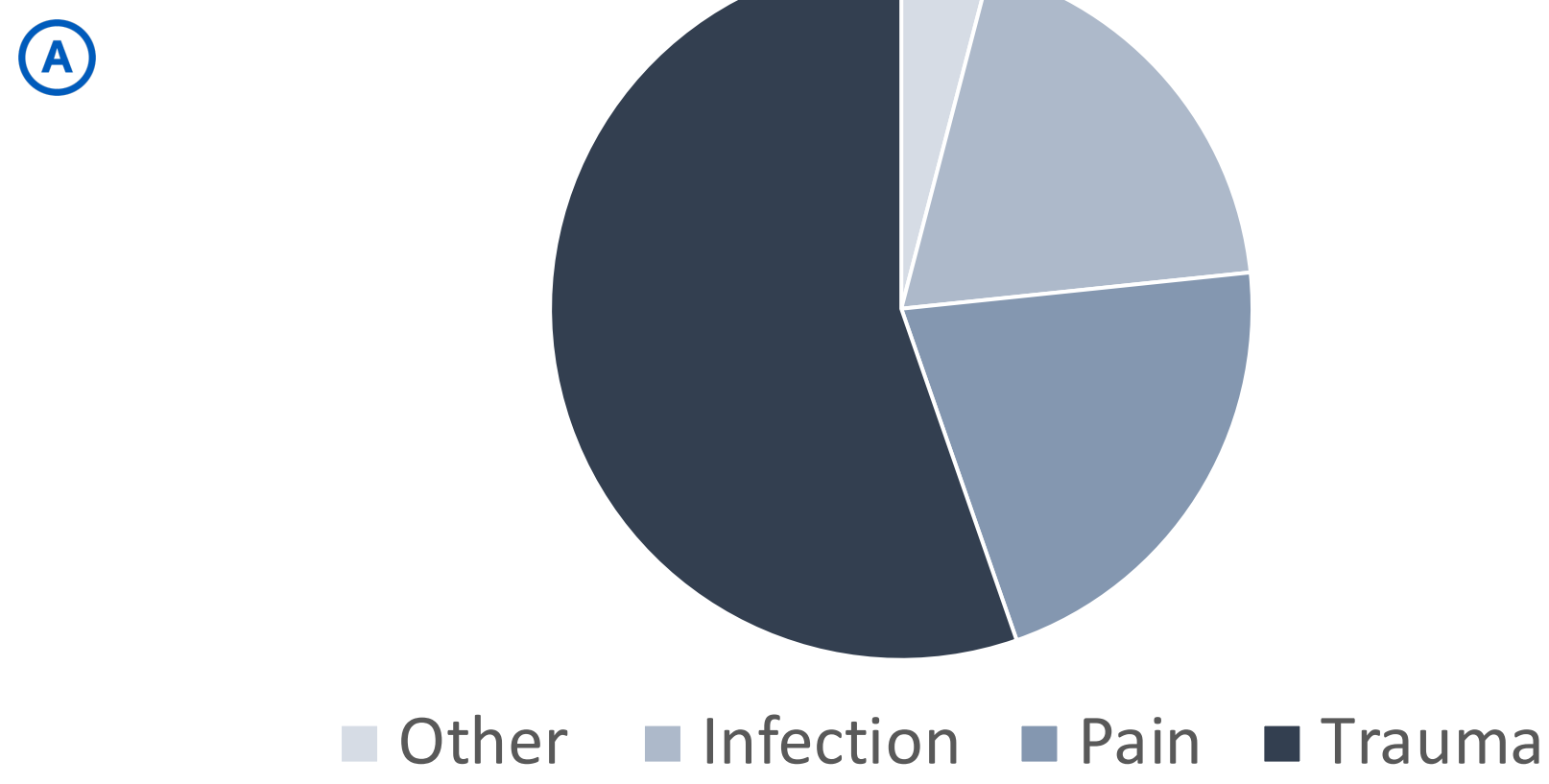
Methods

Patients seen by University at Buffalo pediatric dental residents in the emergency department (ED) at Golisano Children's Hospital of Buffalo (previously Oishei Children's Hospital) were identified. Data from patient charts was extracted from Cerner Powerchart to obtain:

- Patient demographics: age, gender, zip code, race / ethnicity, language spoken
- Details of the ED visit: date and time of service, season of service, reason for visit, reason for exclusion (if relevant) and how long the child spent in the emergency department for a dental case (if available).
- Details of trauma (if applicable): type of trauma, teeth and if soft tissue structures were involved in the trauma, if treatment was done and if the child has a dental home

Due to unavailability of data, metrics such as time spent in the emergency department, reason for exclusion from the study, time presented to the ED, were not included in the final data collection forms.

Reason for Visit



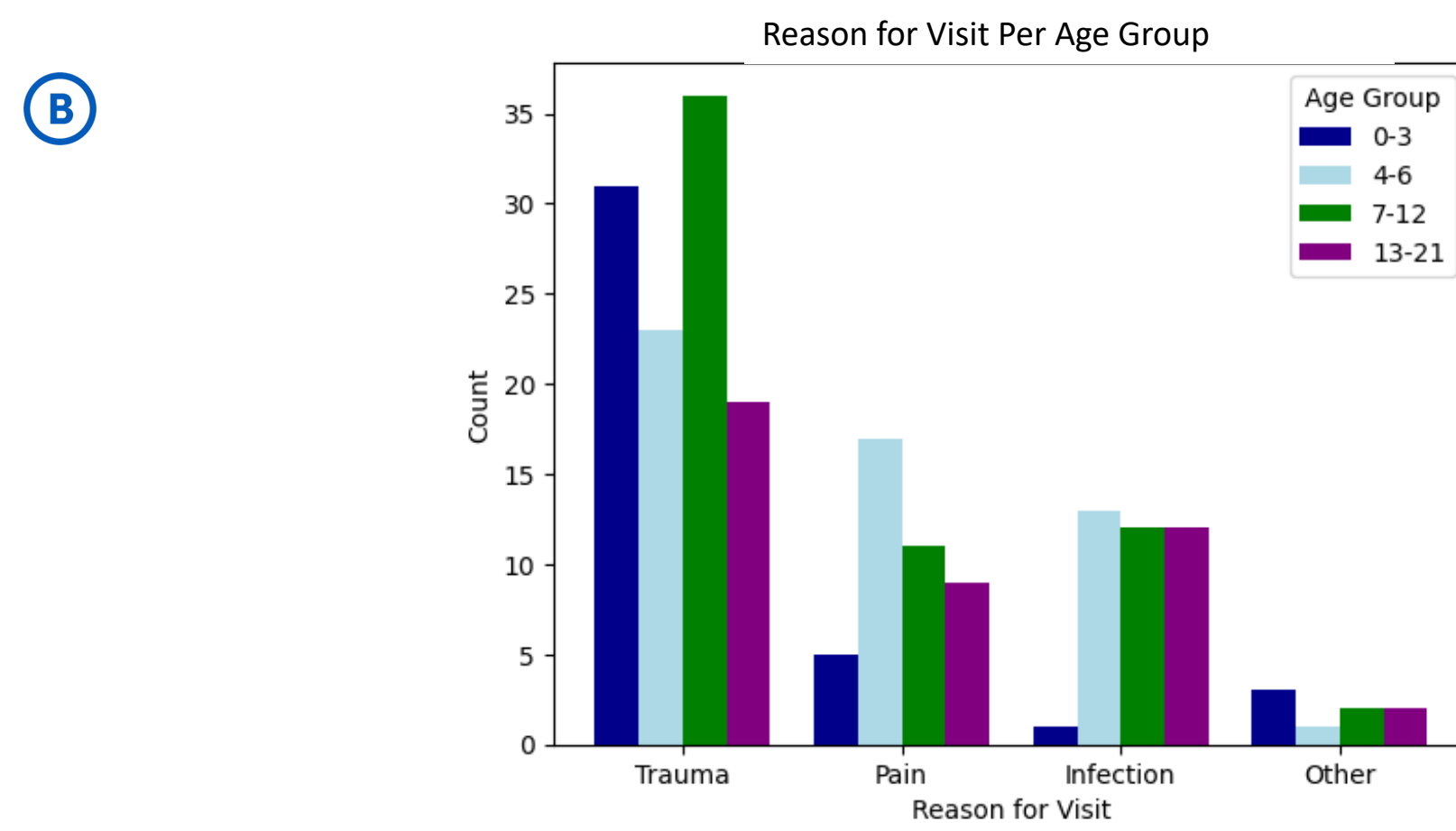
Graph 1. Reason for visit to ED

Dental Home	N	Percent (%)
Yes	138	70.1
No	37	18.8
Unknown	22	11.2

Table 1. Number of patients presenting to ED with or without dental home

Data Analysis

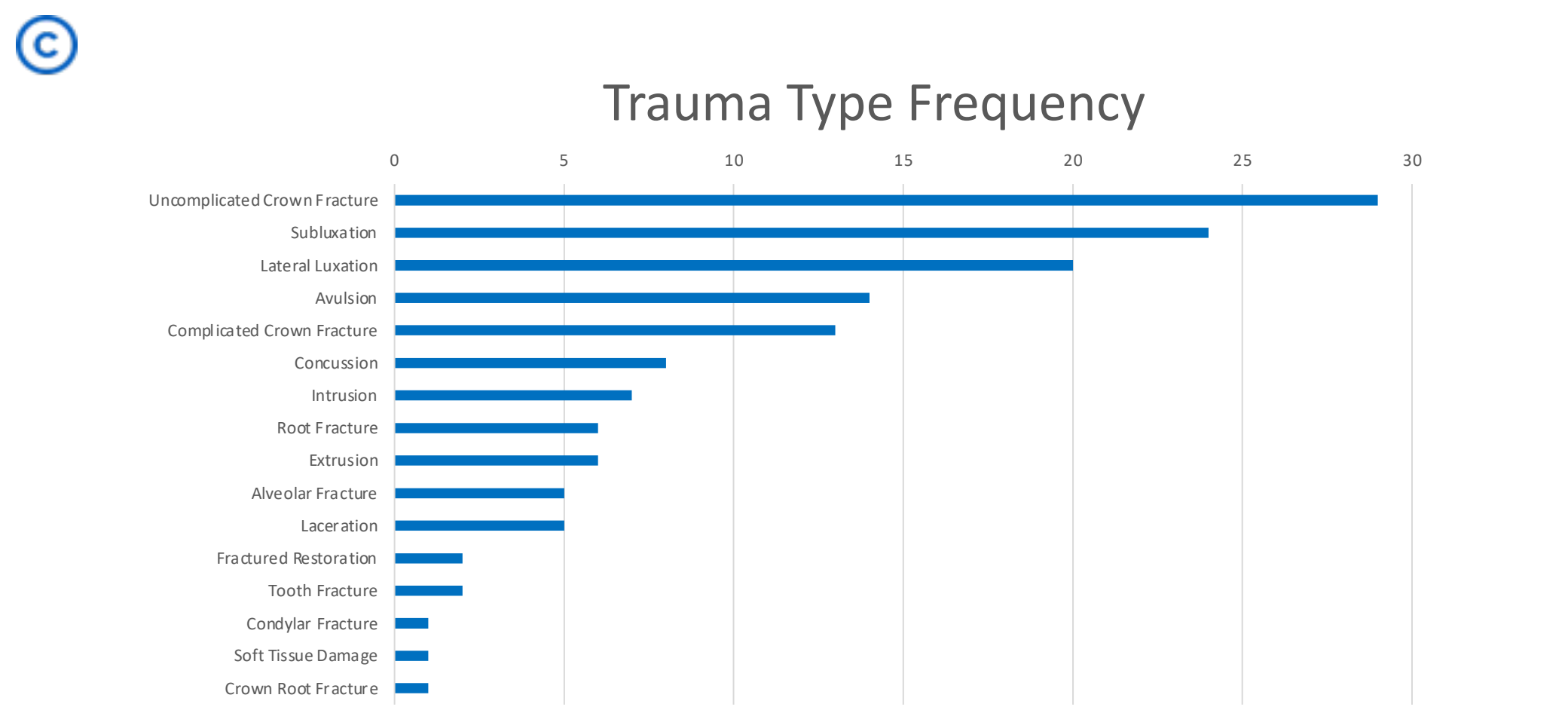
Descriptive statistics were calculated for all variables. Bivariate analysis for selected categorical variables with the reason for visit were tested by Fisher's exact tests. The median income by ZIP code and age were each analyzed with linear models against the covariate of reason for visit. A logistic model was constructed for whether a subject had a dental home using the covariates of reason for visit and average income by ZIP code. All analysis was performed in RStudio (v.2012.12.0+467) with a significance level of 0.05.



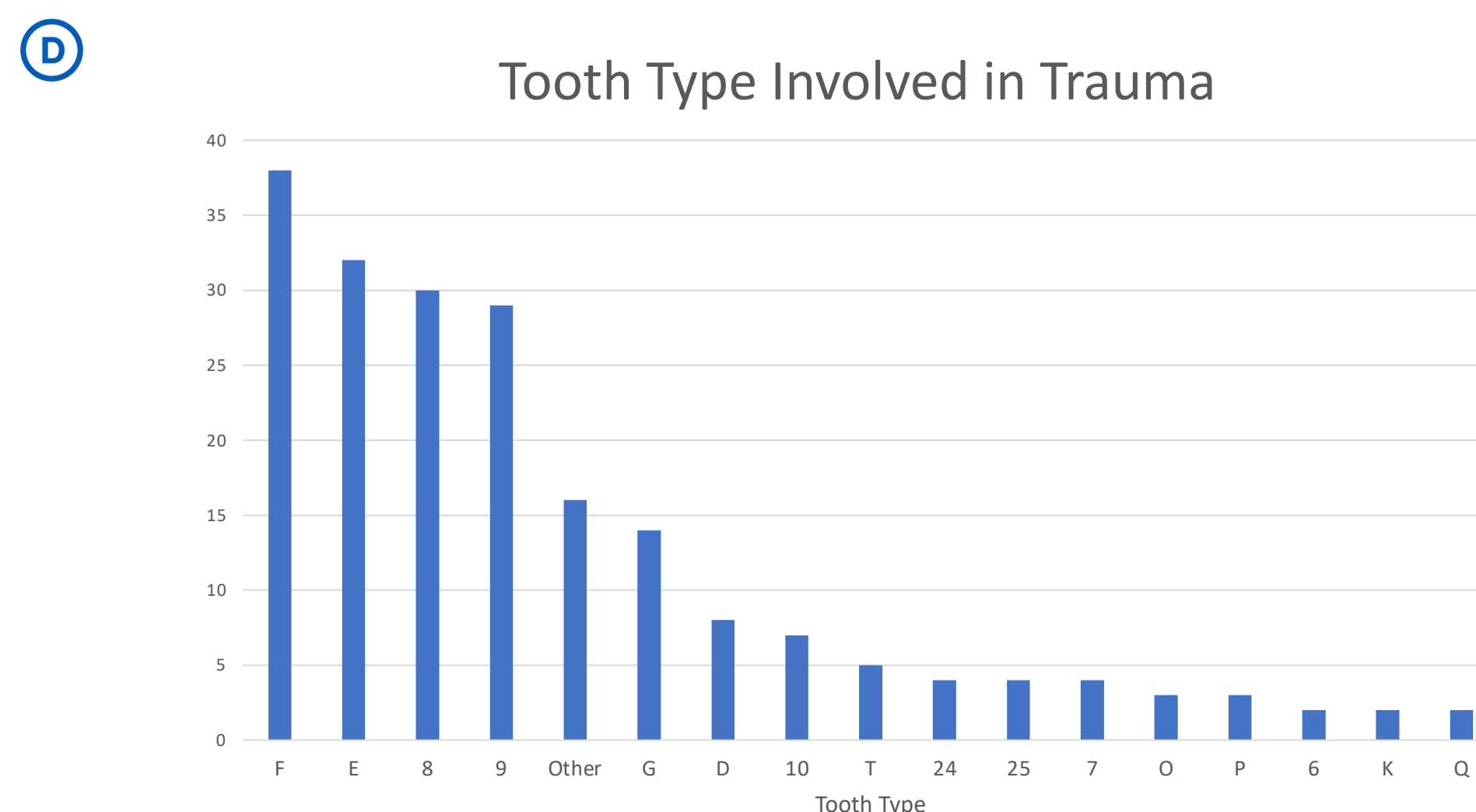
Graph B: Reason for visit per age group

Age	Trauma	Pain	Infection	Other	Total
0-3	31 (77.5%)	5 (12.5%)	1 (2.5%)	3 (7.5%)	40
4-6	23 (42.6%)	17 (31.5%)	13 (24.1%)	1 (1.9%)	54
7-12	36 (59.0%)	11 (18.0%)	12 (19.7%)	2 (3.3%)	61
13-21	19 (45.2%)	9 (21.4%)	12 (28.6%)	2 (4.8%)	42
Total	109	42	38	8	197

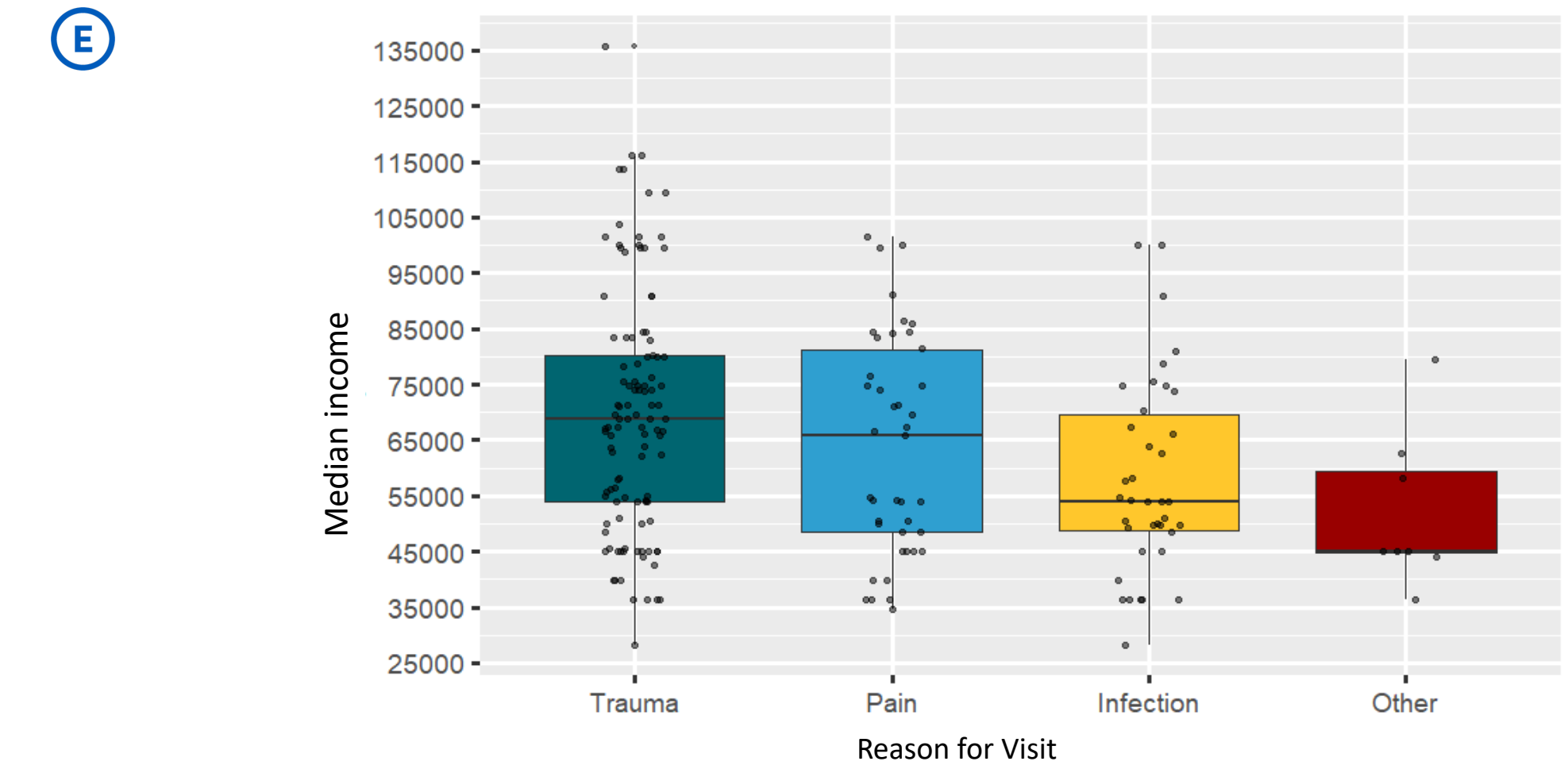
Table 2: Reason for visit per age group



Graph C: Frequency of trauma types



Graph D: Frequency of tooth involved in trauma



Graph E. Boxplot of reason for visit compared to median income. Median income determined by patient zip code.

Results

- Most common reason for ED visit is trauma (55%), followed by dental pain (21%) and dental infection (19%).
- 70.1% of patients presenting to ED for dental concerns have a dental home, 18.8% do not.
- Trauma was the reason for visit in ages 0-3 77.5% of the time, and in ages 7-12 59% of the time.
- Most common trauma types: uncomplicated crown fracture (20%), subluxation (16.6%), lateral luxation (13.8%)
- Most common teeth involved: F (19.3%), E (16.2%), 8 (15.2%), 9 (14.7%)
- Referral to dental home was the only treatment done 41% of the time
- Those who come in for infection are on average 2 years older than those coming in for trauma (P=0.017).
- Compared to people that come in for trauma, people that come in for infections have a lower median income (P=0.003)

Conclusion

The purpose of this study was to determine the burden of dental visits on the emergency department at the Golisano Children's hospital in Buffalo, NY. Based on our results, we make the following observations:

- Dental clinics could reduce burden on ED by implementing an emergency phone line and encouraging patients to use it.
- Anticipatory guidance, including trauma education and injury prevention, could reduce the dental burden on the ED
- Dental trauma education for ED nurses and doctors could reduce the need to bring in dentists, reducing waiting and treatment times.

References

1. Lembacher S, Schneider S, Lettner S, Bekes K. Prevalence and Patterns of Traumatic Dental Injuries in the Permanent Dentition: A Three-Year Retrospective Overview Study at the University Dental Clinic of Vienna. *Int J Environ Res Public Health*. 2022 Nov 25;19(23):15725. doi: 10.3390/ijerph192315725. PMID: 36497799; PMCID: PMC9735572.
2. Born CD, Jackson TH, Koroluk LD, Divaris K. Traumatic dental injuries in preschool-age children: Prevalence and risk factors. *Clin Exp Dent Res*. 2019 Jan 30;5(2):151-159. doi: 10.1002/cre2.165. PMID: 31049218; PMCID: PMC6483041.
3. Owens PL, Manski RJ, Weiss AJ. Emergency Department Visits Involving Dental Conditions, 2018. 2021 Aug 19. In: *Healthcare Cost and Utilization Project (HCUP) Statistical Briefs [Internet]*. Rockville (MD): Agency for Healthcare Research and Quality (US); 2006 Feb-. Statistical Brief #280. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK574495/>