

# Airgun Safety: A 20-Year Analysis of Injuries in Pediatric Patients

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## Introduction

- Airguns are thought to be a safer alternative to conventional firearms
- 13,000 injuries from non-powder firearms occur annually in the US
- Multiple result in retained foreign bodies

## Objective

- Our study aims to assess if recent safety recommendations and advisories have led to reduced injuries associated with airguns

## Methods

An analysis using the National Electronic Injury Surveillance System (NEISS) database was performed

## Inclusion Criteria

- Date ranges from 2002 to 2021
- Only head and neck injuries
- Must be BB, pellet, or airsoft firearms
- Patients ranging from 0-19 years old

## Analysis Techniques

□ The analysis was performed for

- gender
- Age
- Diagnosis
- Injury location
- Patient disposition
- Annual frequency

## Results

- A total of 1,658 injuries to the head and neck region were identified due to BB, pellet, and airsoft guns

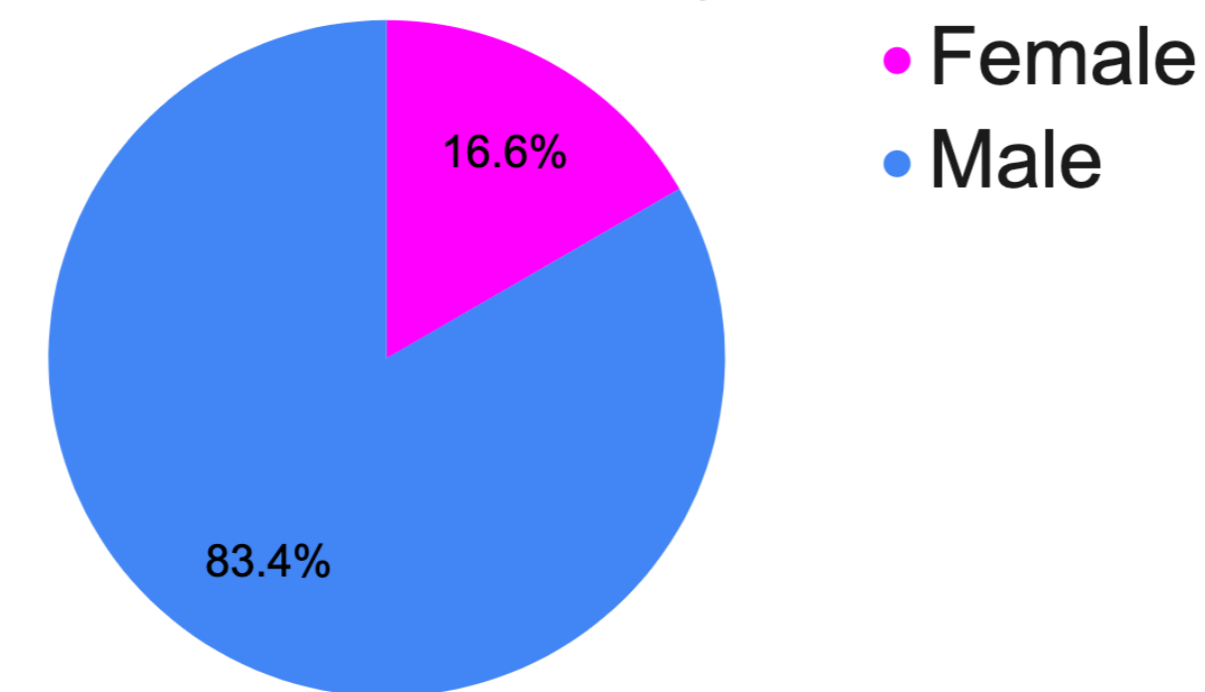


Figure 1: Sex Differences In Observed Injuries

- Males were injured most frequently (83.4%, N=1,382)
- Mean age of injured children was 11.6 +/- 4.3 years old

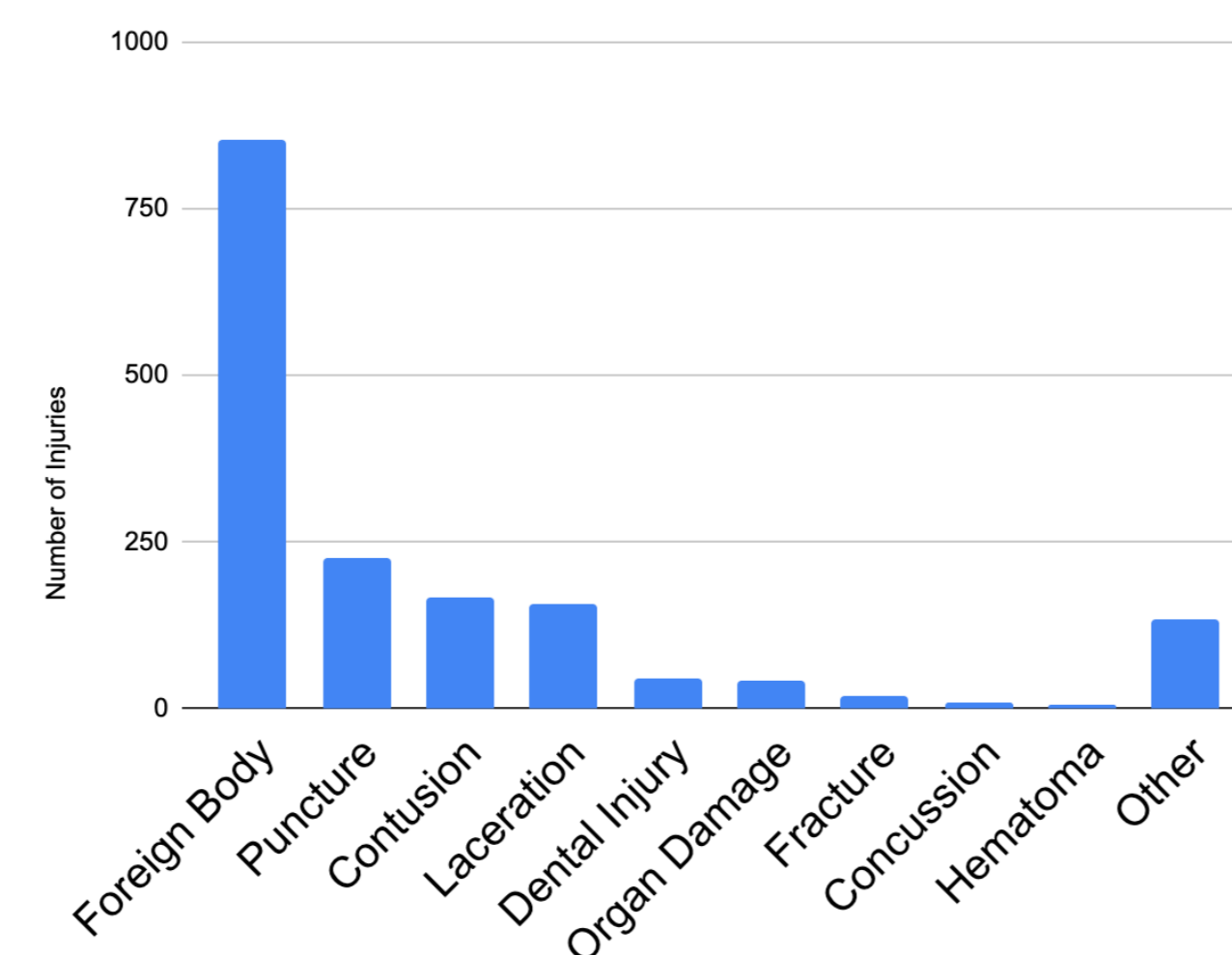


Figure 2: Number of Injuries by Location

- Most frequent injuries sustained were:
  - Retained foreign bodies (51.5%, N=853)
  - Puncture wounds (13.6%, N=225)
  - Contusion/abrasions (10.1%, N=167)
  - Facial injuries (47.9%, N=889)
  - Head/scalp (20.2%, N=376)

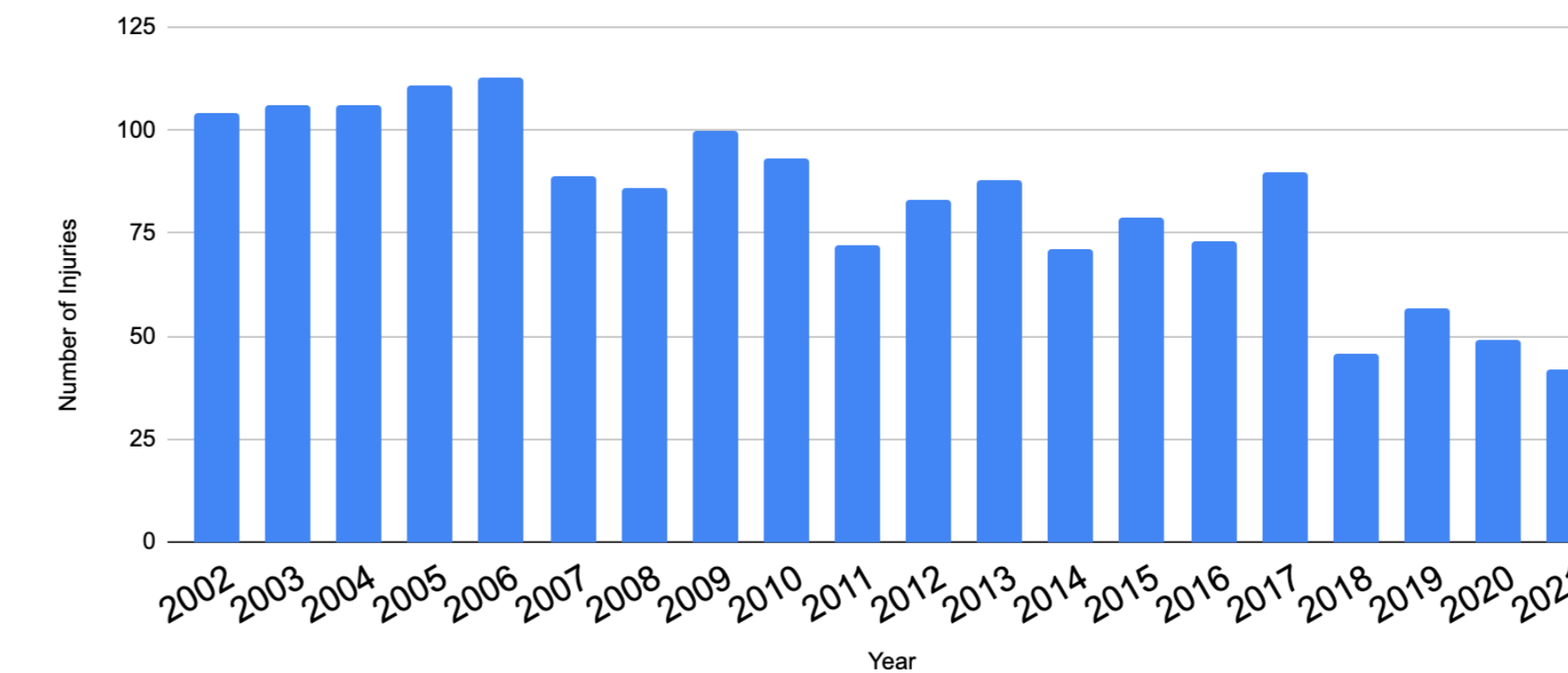


Figure 3: Number of Injuries per Year

- Frequency of injuries per year decreased from 2002 (N=104) to 2021 (N=42) (p<.001)

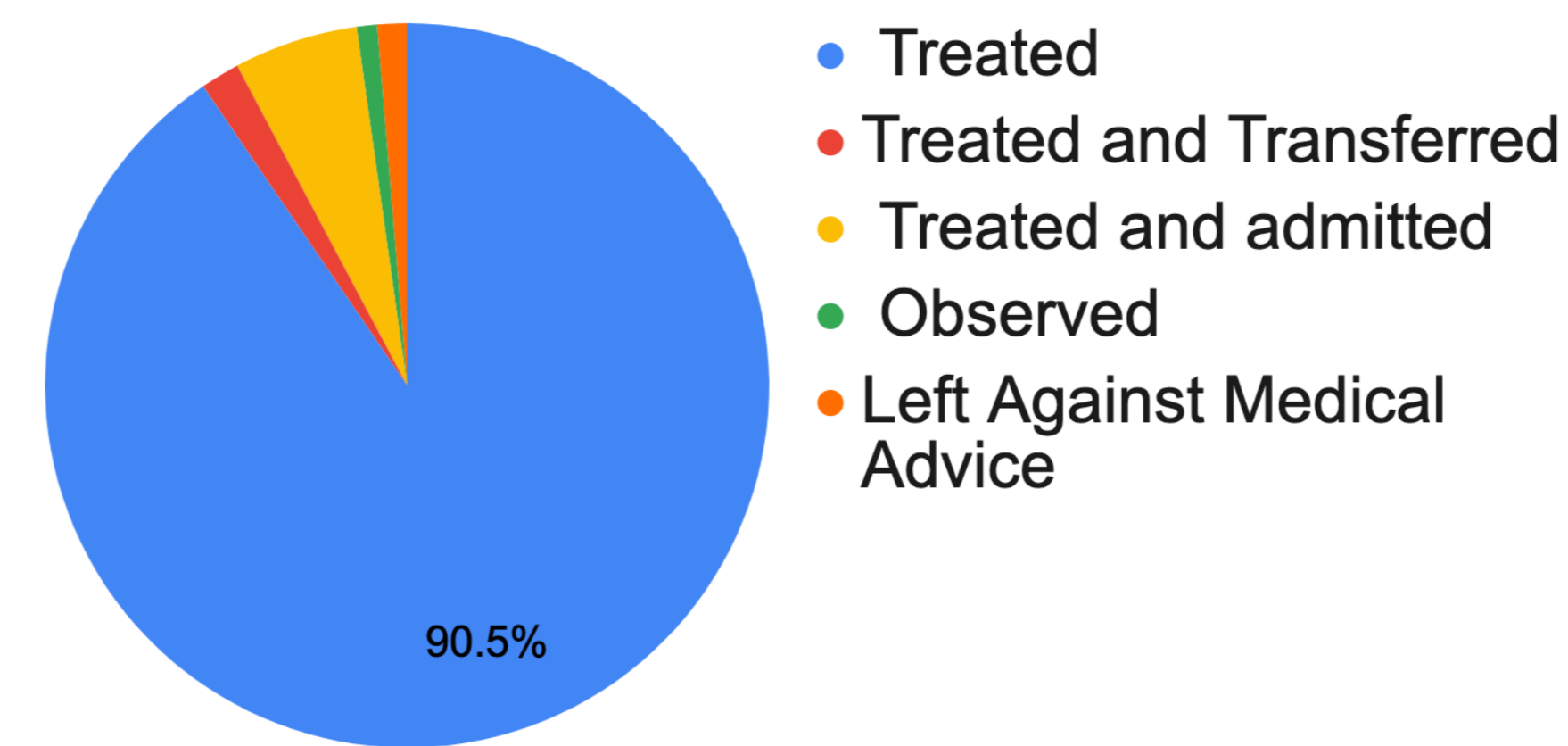


Figure 4: Patient Disposition

- Patients were most commonly treated and released from the Emergency Department (90.5%, N=1,500)
- There were no fatalities

## Discussion

Airgun safety is receiving attention from state lawmakers who are developing rules and regulations related to their use

- 27 States have no legislation related to non-powder firearms:
  - AL, AK, AZ, AR, GA, HI, ID, IN, IA, KS, KY, LA, MD, MO, MT, NE, NV, NM, OH, OR, SC, TN, TX, UT, VT, WV, and WY
- 17 States have legislation related to sale and possession by minors:
  - CA, CO, FL, ME, MA, MI, MN, MS, NH, NY, NC, OK, PA, SD, VA, WA, and WI
- 3 States define airguns as dangerous weapons
  - CT, DE, and ND
- 2 States classify non powder firearms as firearms
  - NJ and RI

## Conclusion

The number of head and neck injuries related to BB, pellet, and airsoft guns is decreasing over the past 20 years, but it still poses a significant source of injuries in children.

## References

1. Dandu KV, Carniol ET, Sanghvi S, Baredes S, Eloy JA. A 10-Year Analysis of head and neck injuries involving nonpowder firearms. *Otolaryngol Head Neck Surg.* 2017 May;156(5):853-856. doi: 10.1177/0194599817695546. Epub 2017 Mar 1.
2. Giffords: Courage to Fight Gun Violence. (2023, August 11). Non-powder & toy guns | Giffords. Giffords. <https://giffords.org/lawcenter/gun-laws/policy-areas/child-consumer-safety/non-powder-toy-guns/>
3. Jones M, Kistangari S, Smith GA. Nonpowder firearm injuries to children treated in Emergency Departments. *Pediatrics.* 2019 Dec;144(6):e20192739. doi: 10.1542/peds.2019-2739.
4. Kumar R, Kumar R, Mallory GW, Jacob JT, Daniels DJ, Wetjen NM, Foy AB, O'Neill BR, Clarke MJ. Penetrating head injuries in children due to BB and pellet guns: a poorly recognized public health risk. *J Neurosurg Pediatr.* 2016 Feb;17(2):215-221. doi: 10.3171/2015.6.PEDS15148. Epub 2015 Oct 23.
5. Summers AR, Cheema AN, Pirruccio K, Kazmers NH, Gray BL. Epidemiology of pediatric nonballistic firearm injuries to the upper extremity in the United States From 2000 to 2017. *Hand (N Y).* 2022 Mar;17(2):293-297. doi: 10.1177/1558944720926626. Epub 2020 May 26. PMID: 32452229;