

Cervical Injuries in Ice Hockey: A Comprehensive Analysis from 2014-2022

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- ### BACKGROUND
- Internationally, lacerations and concussions are the most common ice hockey injuries involving the head and neck.^{1,3,4}
 - Risk of catastrophic injury increases with: aggressive play, checking or body contact, contact with the boards, and a player being pushed or checked from behind.^{2,5,6}
 - Detailed analysis of ice hockey neck injuries in the United States has never been undertaken.

- ### AIMS
- Describe incidence of neck injuries in United States ice hockey seen in the emergency room
 - Identify prevention strategies through application of Haddon's Countermeasures



Image 1. Youth player wearing a neck guard

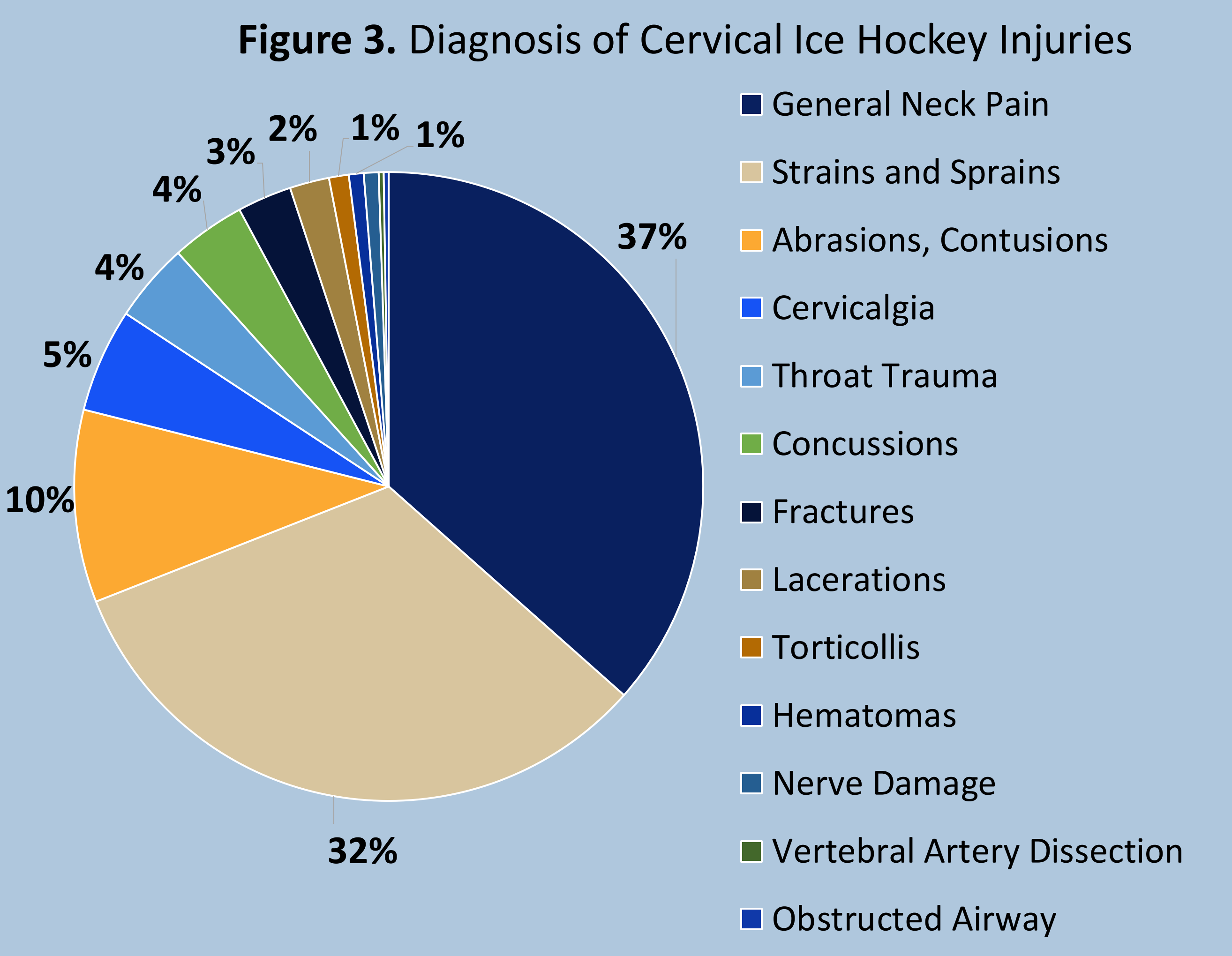
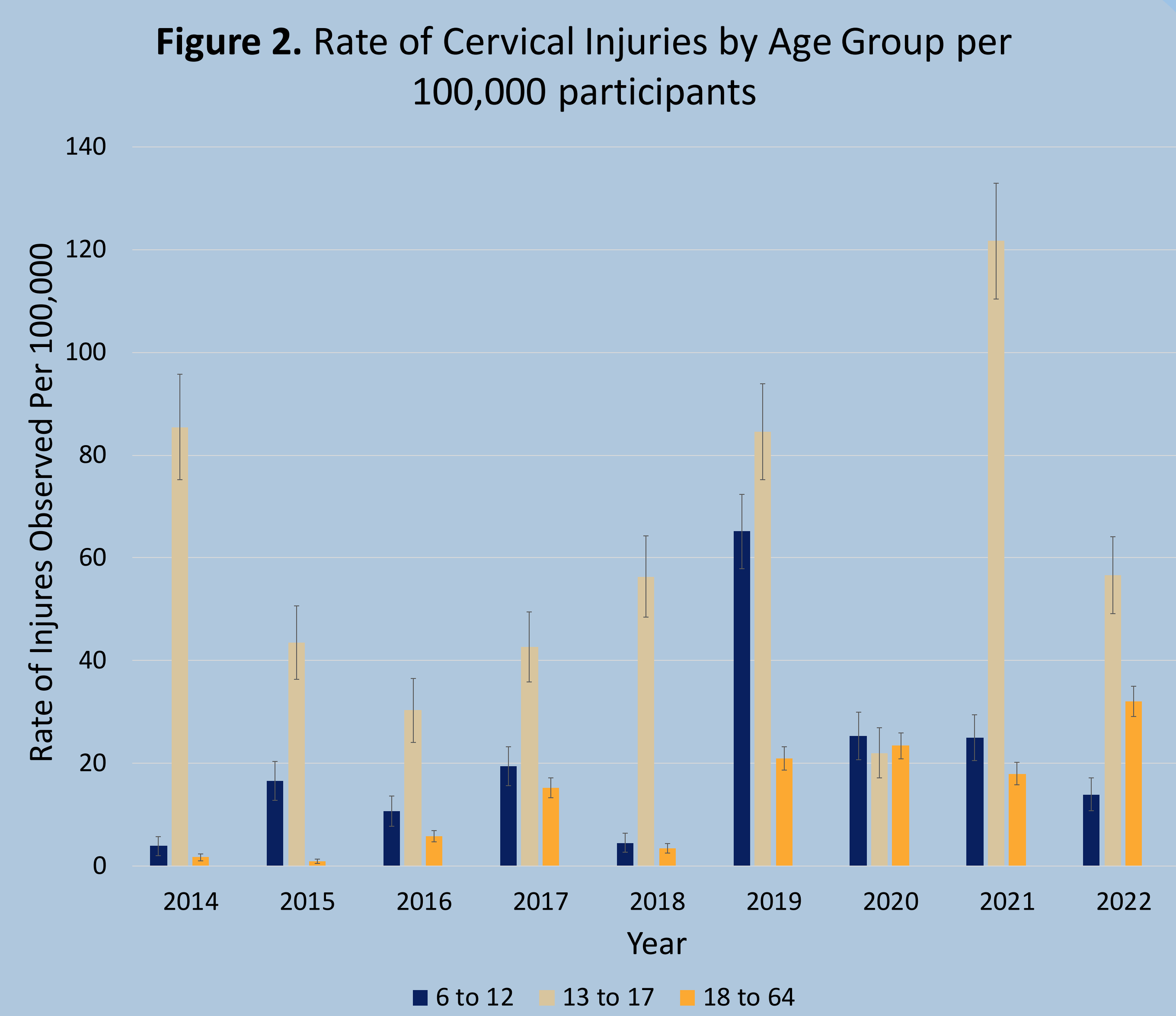
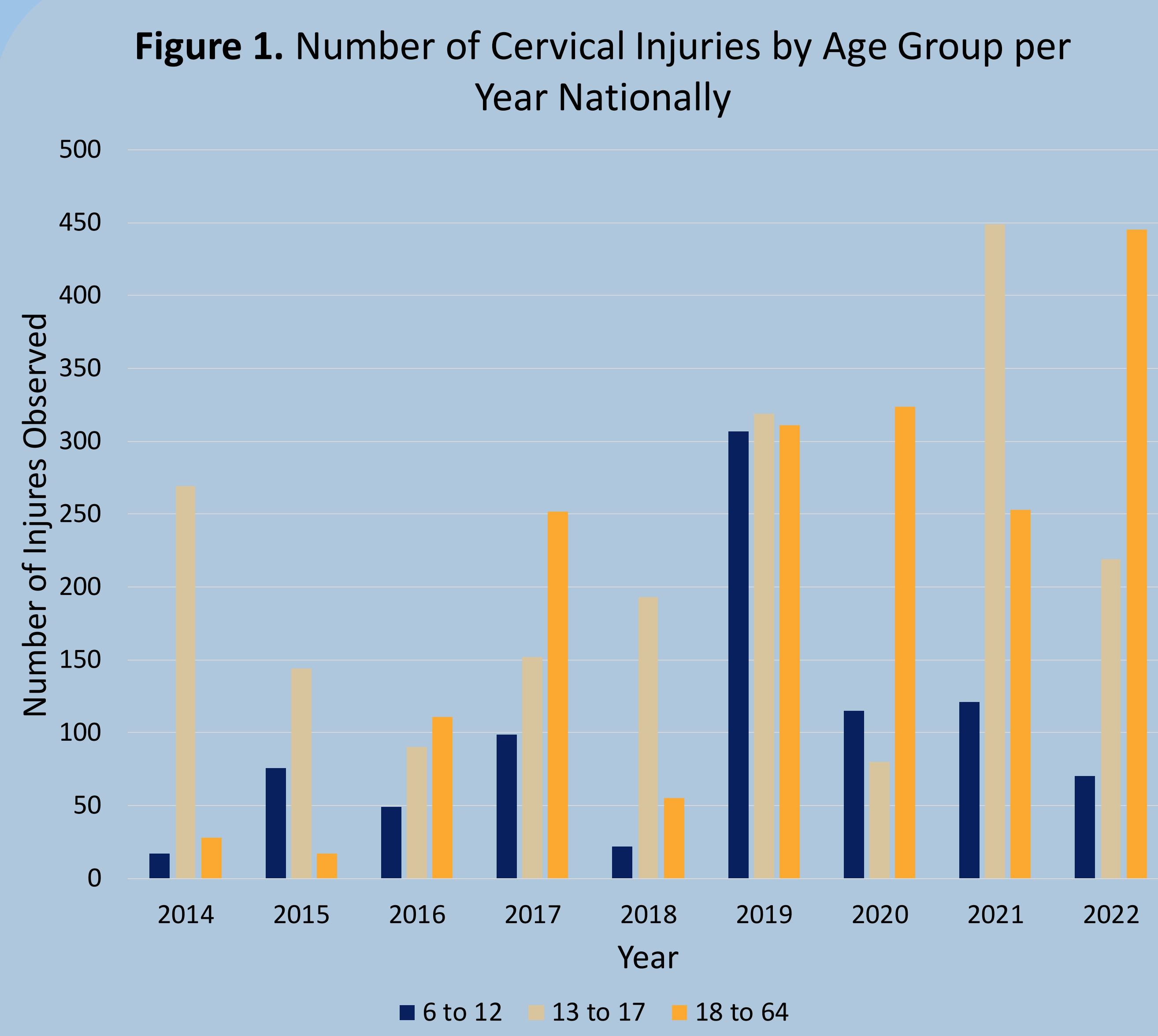
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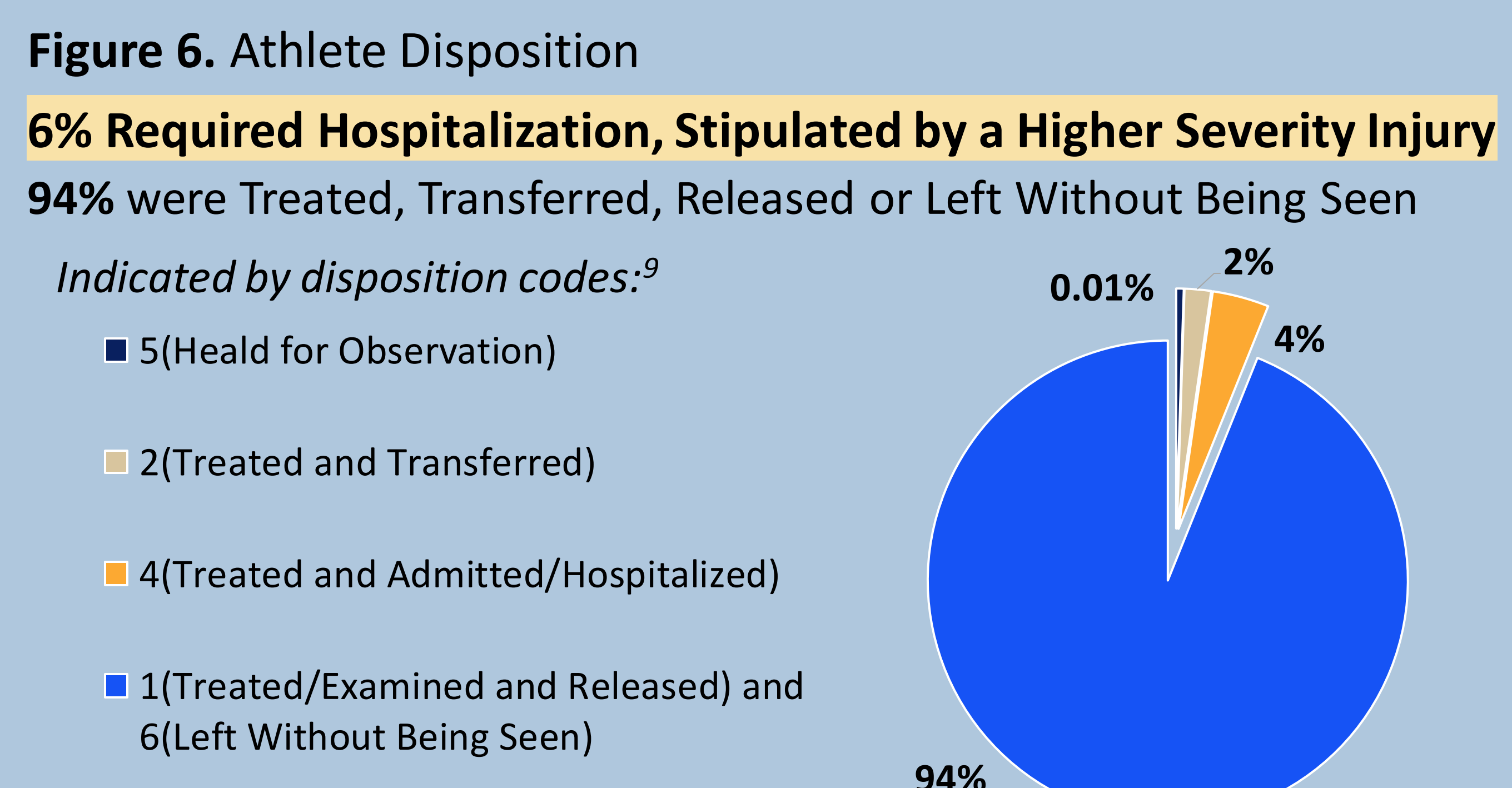
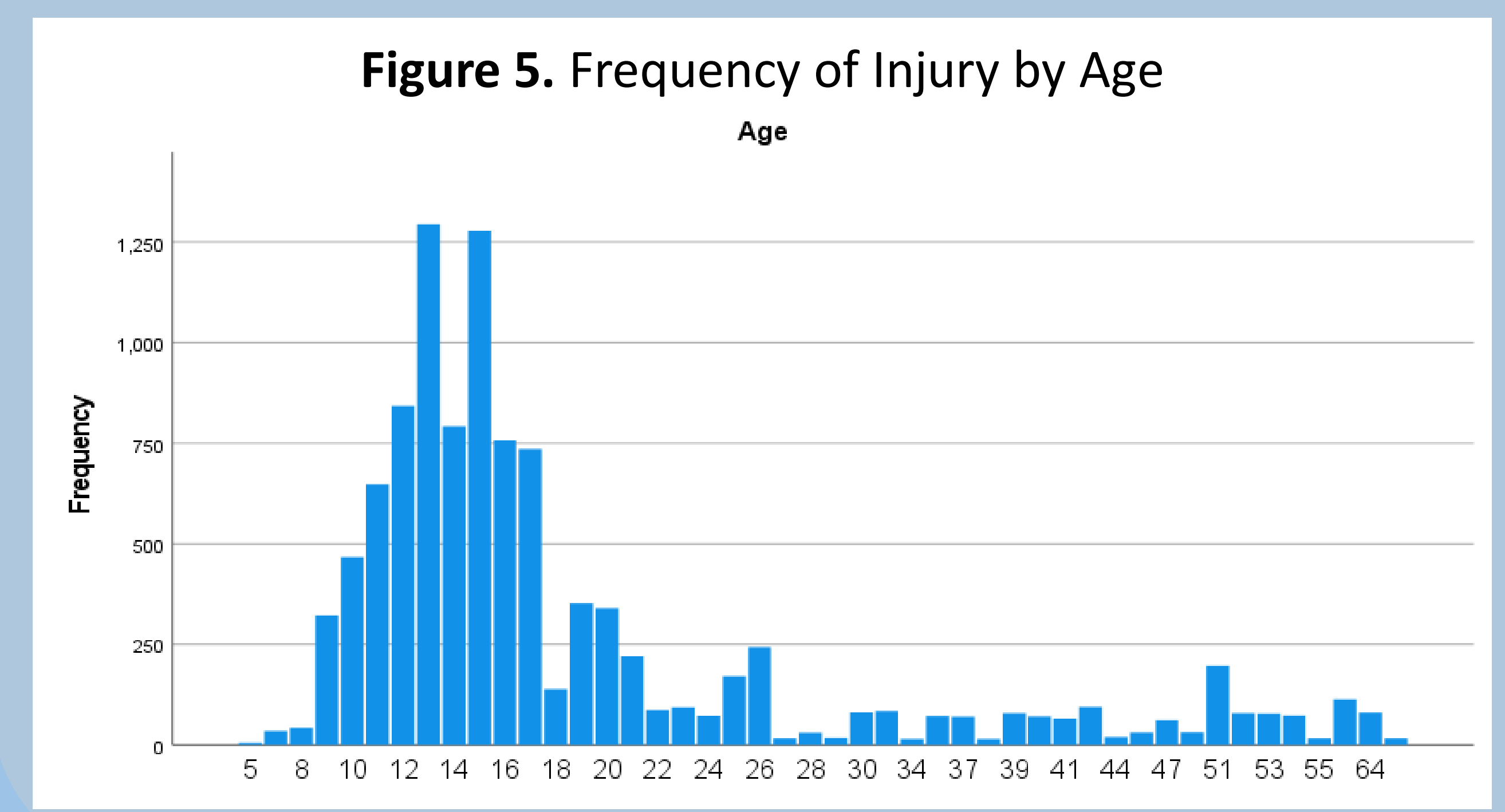
IMAGES

- USA Hockey. (2024). Youth player wearing a neck guard. Retrieved April 18, 2024, from https://www.usahockey.com/news_article/show/1298379
- Steph Chambers/Getty Images. (2024). Andrew Cogliano fractures neck during game after a hit from behind launches him into the boards. Retrieved April 18, 2024, from <https://www.cnn.com/2023/05/02/sport/andrew-cogliano-broken-neck-colorado-avalanche-spt-intl/index.html>

Rates of Neck Injuries in Ice Hockey are on the Rise, Emphasizing the Urgent Need for Improved Safety



- ### Figure 4. Haddon's Countermeasure Recommendations
- #### Countermeasure 1: Prevent Creation of Hazard
- Most cervical injuries happen when players collide with each other, the boards or goal posts.
 - A policy banning contact for all youth ice hockey.
- #### Countermeasure 2: Reduce Amount of Hazard
- The most common injury mechanism occurs when a player's head or neck hits an external object.
 - Policies that bring a player to a complete stop before contacting a fellow athlete prevent this from occurring.
- #### Countermeasure 3: Prevent Release of Hazard
- Pushing or checking without concern for fellow athlete's position in relation to the boards heightens the risk of severe cervical injury.
 - Clear and consistent enforcement of rules preventing players near the boards, but not already touching them, from being launched into the boards.
- #### Countermeasure 4: Separate Hazard by a Physical Barrier
- Improve player buy-in and utilization of neck protection.
 - Referees and coaches, should prevent athletes from playing unless they have neck protection.



- ### METHODS
- U.S. Consumer Product Safety Commission's National Electronic Injury Surveillance System (NEISS) Data
 - Analysis using product code:
 - 1279 (ice hockey)⁹
 - 89 (cervical, neck)⁹
 - Participation Data from Sports Business Network.¹⁰



Image 2. Andrew Cogliano fractures neck during game after a hit from behind launches him into the boards

- ### LIMITATION
- NEISS data may be insufficient for estimating national averages with confidence.
 - Except for ages 12 and 16 (injury estimate over 1250 injuries) national estimates are below 1200 and potentially unstable.⁸
 - Data lacks information on equipment worn by injured players, which could impact injury severity and rate.
 - Cases are limited to those seen in the Emergency Room, excluding information about chronic although potentially critical injuries, and cases that were treated outside of an emergent care setting.
 - These limitations highlight the need for a national registry of ice hockey injuries to address cervical injuries in ice hockey.

- ### RESULTS
- Youngest age group (6-12) exhibited a fluctuating pattern of injuries, peaking in 2019 despite rules against body contact.⁷
 - Highest rates of hospitalization and highest rate of injuries was among youth aged 13-17 engaged in checking or body contact.
 - Spike in injury amongst 18- to 64-year-olds in 2019 to 2022, suggest a rise in factors contributing to cervical injuries amongst this demographic, such as body contact.⁶

- ### DISCUSSION AND CLINICAL IMPLICATIONS
- Accurate monitoring, further investigation of injury trends, and effective injury prevention strategies should address factors that contributed to peak injury rates amongst older adults in 2022, 13- to 17-year-olds in 2021, and 6- to 12-year-olds in 2019.