

Prevalence of Sport-Related Traumatic Brain Injuries in the Criminal Justice System

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Introduction

Traumatic brain injuries are ubiquitous in the criminal justice system, with research reporting a prevalence rate of 60% (Shiroma, Ferguson and Pickelsimer, 2010). TBIs, specifically concussions, are common sport injuries, impacting athletes from youth to professional. Youth sport governing bodies have implemented specific rules to lower the risk of concussion for youth athletes. The US Youth Soccer instigating protocol now holds that no athlete age 10 and under may use their head when playing (US Youth Soccer, 2016). This study identified the rate of sport-related TBIs sustained among members of the Colorado criminal justice system and the Denver juvenile probation system.

Methods

This pilot study used the TBI Implementation Grant database, DU IRB Protocol #674894-2. Study data were collected and managed using REDCap electronic data capture tools hosted at the University of Denver. REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies, providing 1) an intuitive interface for validated data entry; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for importing data from external sources. The database includes data from 900 adult and juvenile probationers and inmates across 17 justice sites. Individuals were screened using the Ohio State University Traumatic Brain Injury Identification Method. Participants whose mechanism of injury for a TBI was identified as "fall" and elaborated with a sports-related theme such as "skiing-fell without helmet" or identified a multiple sports-related injury such as "football" were captured.

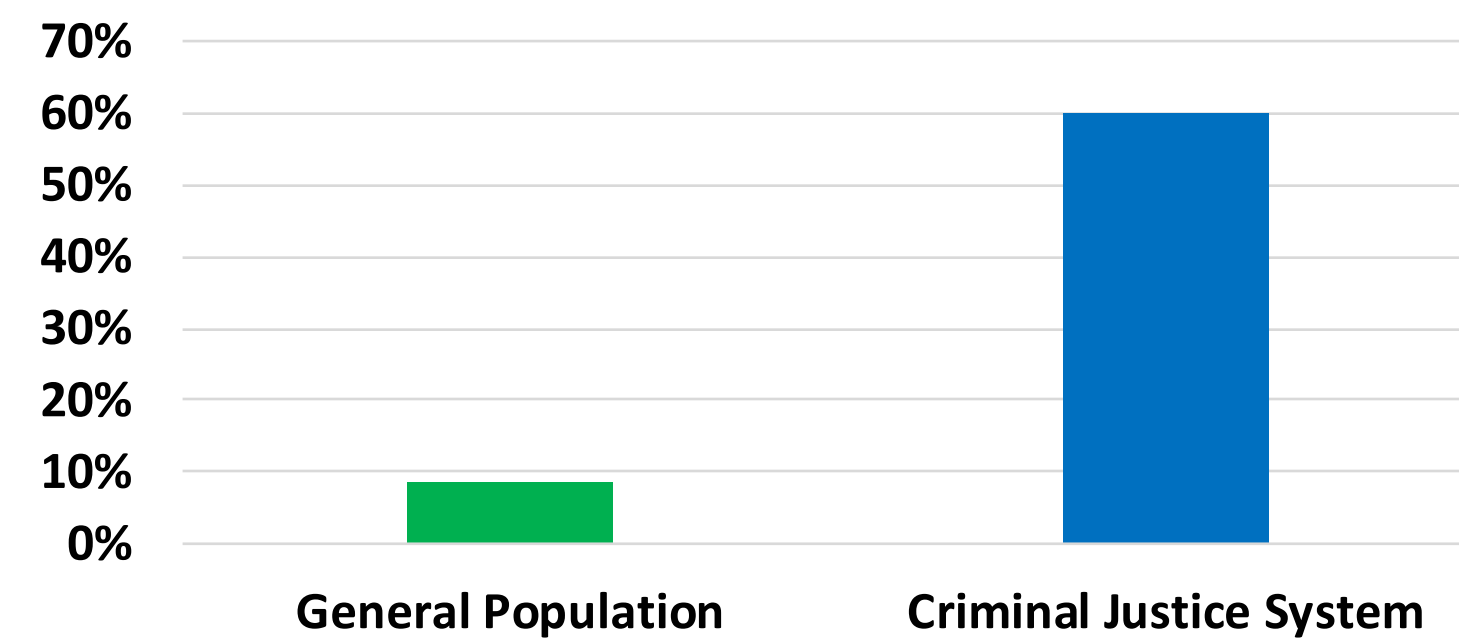
Results

Data were collected from 900 justice-involved individuals across 17 justice sites. The basic demographic breakdown of the participants is as follows: American Indian/Alaska Native (3.1%), Asian (0%), Native Hawaiian or Other Pacific Islander (0%), Black or African American (12.3%), White (62.5%), Hispanic (28.1%), More Than One Race (6.3%), Unknown / Not Reported (0%). Overall, 53% of individuals in this criminal justice setting have a significant TBI history, relative to less than 2% of the general population.

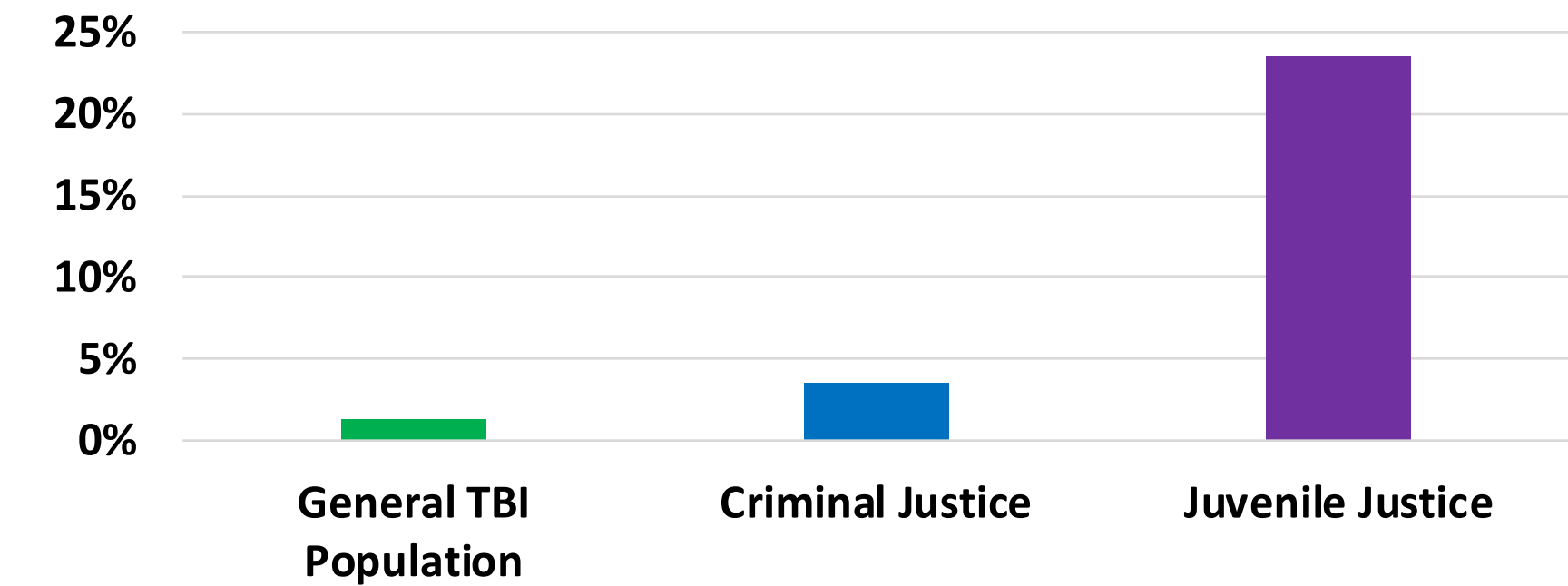
Of the 900 participants who completed an OSU-TBI-ID and a neuropsychological screen, 32 (3.55%) reported a sport-related TBI. The basic demographic breakdown of those participants is as follows: American Indian/Alaska Native (3.1%), White (62.5%), Hispanic (28.1%), More Than One Race (6.3%). The rate of personal crimes is 56.3% vs 56.8% in the general TBI population; the rate of property related crimes was 50.0% vs. 46.0% in the general TBI population; the rate of DUI/DWAI crimes was 34.4% vs. 32.4% in the general TBI population; and the rate of drug related charge was 50% vs. 53.4% in the general TBI population.

Results, Cont.

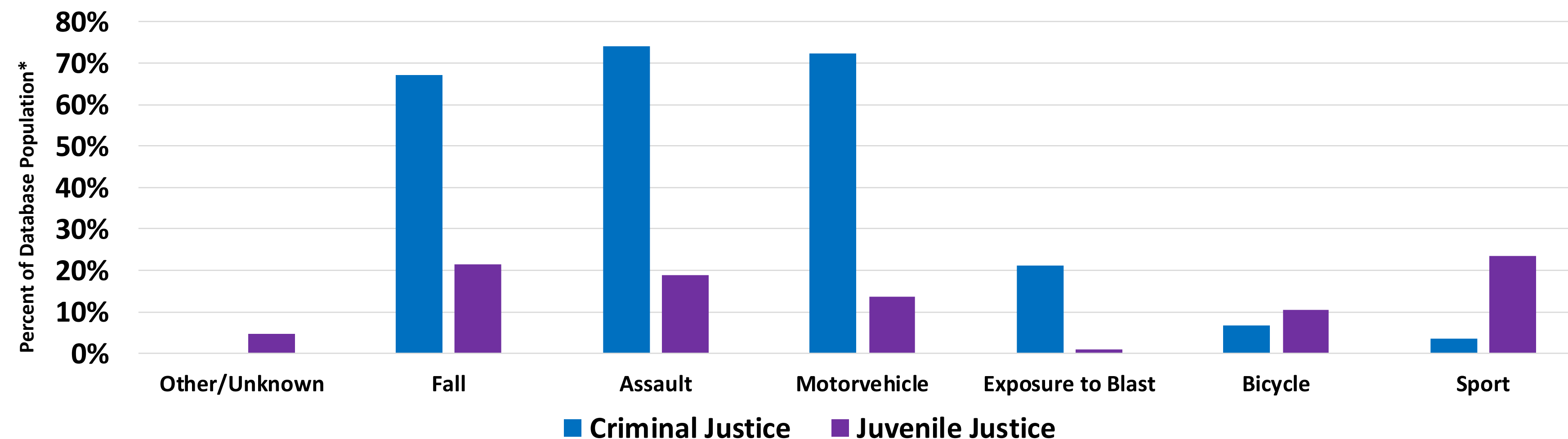
TBIs by Population



Sport-Related TBIs by Population



Mechanism of Traumatic Brain Injury



*Participants who sustained TBIs in more than one category are included in both categories.

Conclusion

Those individuals in the juvenile justice system sustained more TBIs as a result of sport than from any other source. Of the 79 sport-related TBIs reported in the juvenile population, 48 (61%) resulted from football. For the adult criminal justice population sustaining a sports-related TBI, 78% of those individuals reported the occurrence from football. Other multi-occurrence sport injuries reported included soccer, skateboarding, basketball, and lacrosse. Those adults with a lifetime history of sport-related TBI reported more property and DUI/DWAI related convictions whereas the general TBI population reported more personal and drug related convictions in comparison with the sport-related TBI population. These preliminary data suggest the patterns of offenses for adult persons with sport-related TBI may be unique and warrant further study. These early results emphasize the importance of interventions to manage post-injury sequelae for athletes. This is further emphasized by the prevalence of sport-related TBIs in the juvenile population compared to the adult population.

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