Conclusions DUD is prevalent in this population and associated with personal, social, and community exposures. Among those with DUD, diagnosis with multiple drug use disorders was common; network analyses showed several large partial correlations between substances, with cocaine and prescription opioid use disorder co-diagnosis being the most strongly associated.

Significance DUD is linked to a variety of injuries including suicide, partner violence, firearm violence, death by homicide, and violence/injury in general. Understanding the relationship between co-occurring DUDs and associated risk factors allow for targeted intervention strategies.

TBI/Concussion injuries

0051 OBJECTIVE MEASURES OF VISUAL AND AUTONOMIC SYSTEM DEFICITS FOLLOWING CONCUSSION IN ADOLESCENTS

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Statement of purpose Visual and autonomic system disturbances are common sequelae of concussion. Clinical concussion diagnosis currently relies on subjective assessments such as symptom questions such as the Post-Concussion Symptom Inventory (PCSI). Quantification of visual and autonomic dysfunction could provide an objective method of acute diagnosis and subacute identification of ongoing injury.

Methods/Approach We collected objective eye tracking data from three cohorts ages 12–17 years: healthy controls (n=105, mean age: 15.3, 56.2% female), concussed cases seen within 28 days of injury (acute, n=125, mean days since injury:12.5, mean age: 15.4, 46.4% female) and concussed cases seen within 29–90 days of injury (sub-acute, n=94, mean days since injury: 53.6, mean age: 15.4, 70.2% female). We compared self-reported symptoms and eye tracking metrics across groups using a series of chi-square analyses and one-way analysis of variance, with Tukey's range test for post-hoc testing. Bonferroni corrections were used to account for multiple comparisons.

Results Controls reported significantly lower PCSI scores (mean $\pm$ SD: 6.0 $\pm$ 9.1) than acute cases (31.2 $\pm$ 24.7, $p < 0.001$) and sub-acute cases (31.4 $\pm$ 27.8, $p < 0.001$). A significantly lower proportion of controls experienced symptoms after completing the assessment (10%) than acute cases (55%, $p < 0.001$) and sub-acute cases (38%, $p < 0.001$). Six eye tracking metrics related to pupil diameter (left and right pupil size mean and median values, mean and median differences in left and right pupil size), were significantly greater among acute and sub-acute cases compared to controls.

Conclusion Measures of pupil diameter were greater for acute and sub-acute cases compared to healthy controls, suggesting autonomic dysfunction post-injury. No other metrics related to eye movement were discriminatory in this cohort, likely due to the heterogeneity of concussion.

Significance These findings support the quantification of visual and autonomic dysfunction as objective markers of pediatric concussion.

Alcohol and substance abuse

0053 AN ANALYSIS OF DRUG OVERDOSE DEATHS BY INTENT IN OHIO FROM 2016–2018

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Statement of purpose In 2018, unintentional drug overdose was the leading cause of injury-related deaths among Ohioans. In the same year, drug poisoning was the third leading mechanism of suicide deaths. This session will review the 'who, when, where, and how' of overdose deaths from the Ohio Violent Death Reporting System (OH-VDRS) to provide participants with an understanding of the sociodemographic characteristics and related circumstances (e.g., prior suicide attempts, prior mental health or substance use disorder treatment, co-occurring mental health conditions) surrounding overdose deaths.

Methods/Approach Descriptive statistics of 2016–2018 OH-VDRS data assessed sociodemographic characteristics of and circumstances preceding deaths by unintentional and intentional (i.e., suicide) drug overdose among Ohio residents who died in Ohio.

Results Regardless of intent, most drug overdose decedents were Caucasian (unintentional: 84.6% versus intentional: 95.3%) with a high school degree or less (unintentional: 77.4% versus intentional: 62.5%). While unintentional drug overdose decedents were more likely to be male (67.0%) and 25–34 years old (27.8%), most intentional drug overdose decedents were female (54.9%) and 45–54 years old (26.3%). Regarding circumstances, a larger proportion of unintentional drug overdose decedents had a substance abuse problem (86.2% versus 27.3%), while a larger proportion of intentional drug overdose decedents had a mental health condition (78.9% versus 43.3%). Toxicology differences were noted; antidepressants, anticonvulsants, antipsychotics, and benzodiazepines were identified as a cause of death in a higher proportion of intentional drug overdose deaths, while cocaine and opioids were identified in more unintentional drug overdose deaths.

Conclusion Examining drug overdose trajectories by intent can better inform interventions by targeting diverse prevention strategies to the appropriate populations.

Significance A better understanding of drug overdose trajectories by intent could provide evidence to guide the data-driven decision making surrounding the development and implementation of evidence-based policies, programs, and interventions.

Homicide/Assault

0054 SOCIAL AND PHYSICAL ENVIRONMENTAL DETERMINANTS OF VIOLENT HOMICIDE DEATH INCIDENCE: A SPATIAL ECOLOGICAL CASE-CONTROL STUDY OF US ZIP CODES

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Statement of purpose Violent homicide is a major cause of death and a driver of health disparities in the US. It is not

clear why some neighborhoods with high concentrations of racial and ethnic minority residents have high violent homicide incidence, while others do not experience violent homicide. The aim of this study is to identify the social and physical environmental conditions that contribute to increased violent homicide incidence in US neighborhoods, independent of racial and ethnic composition.

Methods/Approach Using the CDC's National Violent Death Reporting System (NVDRS), we conducted an ecological case-control study to compare environmental conditions in the 250 ZIP codes with the highest violent homicide death rate in 2017 (cases) to 250 ZIP codes that did not experience any violent homicide deaths in 2017 (controls). Cases were matched 1:1 to interstate controls based on demographic profiles. A multi-level logistic regression estimated the odds that ZIP codes have high incidence of violent homicide according to social and physical environmental conditions measured at both the ZIP code- and state-levels.

Results We found that local neighborhood socioeconomic demographics were associated with incidence of violent homicide death, independent of age, race/ethnicity, and sex. Associations were strongest for lower median household income and greater economic inequality at the ZIP code-level. ZIP-code characteristics explained associations between state-level characteristics and violent homicide occurrence.

Conclusions Living in higher-income and less densely populated ZIP codes was associated with decreased risks of violent homicide. Local ZIP code characteristics are stronger determinants of homicide incidence than state-level characteristics.

Significance Area-based interventions that would improve neighborhood social and economic conditions may reduce violent homicide incidence.

Occupational safety

0055 POTENTIAL FOR USING MOBILE APPS TO DELIVER SAFETY INTERVENTIONS TO COMMERCIAL FISHERMEN

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Statement of purpose Mobile technology is being used to develop innovative safety interventions for a variety of workplaces. We assessed the potential for using such technology to improve safety in commercial fishing, one of the most dangerous occupations in the United States. Technology adoption theories suggest that experienced mobile device users would be more likely to adopt a new app than inexperienced individuals. In this analysis we examined commercial fishermen's current use of mobile devices and safety-related apps during their usual fishing operations.

Methods/Approach Participants were commercial fishing vessel captains who owned an iOS or Android smartphone or tablet. As part of a study field-testing two novel mobile apps, we collected information about participants' prior mobile device use and app use during typical fishing operations, as well as their interest in such apps more generally.

Results Of the 52 participants who completed all stages of the study, 86.5% (n=45) reported ever having used a mobile device while out at sea, 59.6% (n=31) reported using apps to

help them with their commercial fishing work, and 25.0% (n=13) reported using safety-related apps either at work or on their own time.

Conclusion Among commercial fishing captains with a smartphone or tablet, a majority have used at least one mobile device during fishing operations. More than half already use mobile apps to help them with their fishing work, and one quarter already use some kind of safety-related mobile apps.

Significance Many commercial fishing captains use a smartphone or tablet while fishing at least some of the time, and a substantial proportion of them already use apps for fishing or safety purposes. These findings suggest that commercial fishing workers are experienced mobile device users who are open to using safety-related apps. Mobile apps are therefore a promising avenue for delivering safety interventions to this population.

Trauma Systems

0056 LAW ENFORCEMENT AND TRAUMA CARE IN THE EMERGENCY DEPARTMENT

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Statement of purpose Our purpose is to describe how United States' (US) trauma surgeons perceive law enforcement activities during acute trauma care and their impact on patient care.

Methods/Approach All trauma surgical care providers who are members of the American Association for the Surgery of Trauma, the preeminent trauma surgical professional society in the US were recruited via email for an anonymous online survey from September-October 2020. All data were analyzed descriptively.

Results Approximately 20% (231) of the society's membership completed the survey. The majority of respondents were affiliated with Level I trauma centers in urban settings, and witness law enforcement activities during trauma care at least weekly. These activities include questioning patients as suspects or witnesses to crimes, evidence collection, and surveillance of patients under arrest. Respondents' perceptions of the risks and benefits of law enforcement activities during emergency trauma care varied widely. On a continuum from very harmful to very helpful for patients, 36% perceived police presence during emergency trauma care as neither helpful nor harmful, 36% as helpful, and 28% as harmful. The majority (80%) felt that they had oversight over police access to patients in their care. To determine access to patients, respondents prioritized patients' physiologic stability and the safety of clinical staff. 79% did not know of any institutional policy at their place of employment to guide law enforcement activities during acute trauma care, and 73% endorsed the need for relevant policy.

Conclusions Law enforcement activities frequently intersect with the emergency care of trauma patients, and current institutional guidance is lacking.

Significance As law enforcement officers are asked to play increased roles in emergency medical care (in response to violence, motor vehicle crashes, and opioid overdose) there is a need to evaluate current practice and address relevant policy gaps.