



Compounding Trauma: the Intersections of Racism, Law Enforcement, and Injury

Joanelle A. Bailey¹ · Sara F. Jacoby² · Erin C. Hall³ · Utsha Khatri⁴ · Gregory Whitehorn¹ · Elinore J. Kaufman¹

Accepted: 11 April 2022 / Published online: 12 May 2022
© The Author(s), under exclusive licence to Springer Nature Switzerland AG 2022

Abstract

Purpose of Review Traumatic injury sits at the nexus of law enforcement and structural racism. This narrative review aims to explore the major impacts of law enforcement on health, its intersections with US structural racism, and their joint impacts on traumatic injury and injury care.

Recent Findings Many of the same forces of systemic disadvantage that put Black people, other people of color, and other marginalized groups at risk for violent injury also expose these same individuals and communities to intensive policing. Recent evidence speaks to the broad impact of police exposure and police violence on individual and community physical and mental health. Moreover, injured patients who are exposed to law enforcement during their care are at risk for erosion of trust in and relationships with their healthcare providers. To optimize the role of law enforcement agencies in injury prevention, collaboration across sectors and with communities is essential.

Summary A broad approach to the prevention of injury and violence must incorporate an understanding of the intersecting impacts of law enforcement and structural racism on health and traumatic injury. Clinicians who seek to provide trauma-informed injury care should incorporate an understanding of the role of law enforcement in individual and community health.

Keywords Trauma · Law enforcement · Structural racism · Health disparities

Introduction

The Law Enforcement Code of Ethics, adopted in 1957 by the International Association of Chiefs of Police, states that a law enforcement officer's "fundamental duty is to serve

the community; to safeguard lives and property; to protect the innocent against deception, the weak against oppression or intimidation and the peaceful against violence or disorder; and to respect the constitutional rights of all to liberty, equality, and justice" [1]. This mission complements the definition of public health given by C.E.A. Winslow in 1920: not only "preventing disease, prolonging life, and promoting physical health" but also "the development of the social machinery which will ensure to every individual in the community ... his birthright of health and longevity" [2]. As it is currently structured and practiced in the USA, however, law enforcement and the criminal legal system pose serious challenges to individual and community health and contribute to the broad, systemic disempowerment and criminalization of Black people, with pronounced adverse effects on the well-being of people of color and other marginalized groups [3••, 4, 5].

This narrative review aims to explore the major impacts of law enforcement on health, its intersections with US structural racism, and their joint impacts on traumatic injury and injury care. The impacts of law enforcement on

This article is part of the Topical collection on *Racism, Equity and Disparities in Trauma*.

✉ Elinore J. Kaufman
Elinore.Kaufman@pennmedicine.upenn.edu

¹ Division of Traumatology, Surgical Critical Care, and Emergency Surgery, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, USA

² University of Pennsylvania School of Nursing, Philadelphia, PA, USA

³ Trauma Surgery and Critical Care Medicine, MedStar Health, Washington, DC, USA

⁴ Department of Emergency Medicine, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, USA

health include not only the potential to prevent or interrupt violence, but also injuries and deaths caused by police, the adverse mental and physical health impacts of exposure to intensive policing, and to the downstream harms of incarceration for individuals, families, and communities [6, 7]. Where policing is invasive, or where it overlaps with healthcare delivery, it may compromise access to and trust in healthcare providers and institutions [8, 9••].

The harms of policing have not developed by chance, nor are they inevitable. The history of law enforcement in the USA includes the legacy of slave patrols [10], but in the last half century, the US criminal legal system has expanded its reach [11]. This expansion has taken place in the context of chronic disinvestment in social services that has left police responsible for everything from traffic stops and noise complaints to evictions, overdoses, and psychiatric emergencies [12]. In policing, a key aspect of this expansion is the growth of “order maintenance” or “broken windows” strategies. These approaches to policing draw on the assumption that minor disorder portends serious crime and violence. Police forces are then tasked with maintaining order, leading to frequent stops and arrests for low-level offenses. Unfortunately, this intensive approach to policing has not been clearly shown to reduce crime [12], but has contributed to a fivefold increase in the proportion of the population that is incarcerated [13]. As Michelle Alexander has argued in *The New Jim Crow*, mass incarceration has served to substitute for segregation and other forms of legally explicit racism [14]. Thus while Black Americans comprise only 13% of the population, they make up 40% of the prison population [15].

As Rich and Grey argue in their 2005 article [16], heightened feelings of insecurity and stress, and the onset of PTSD, depression, and other mental health consequences of traumatic injury can lead patients to use drugs to manage symptoms and stress and carry weapons out of concern for personal safety. Some may participate in risky activities to re-establish respect and authority in their social circles [16]. These coping strategies can increase risk of further violent injury, violence perpetration, arrest, and incarceration [17]. By summarizing the intersecting impacts of law enforcement and structural racism on health and traumatic injury, we hope both to inform a broad approach to the prevention of injury and violence, and to provide contexts for clinicians working to provide trauma-informed care to injured patients whose history often includes adverse exposures to the criminal legal system.

Injuries and Deaths Caused by Police

Perhaps the most direct impact of policing on injury is the approximately 1,000 civilians killed by police each year (4% of homicides) [18, 19•, 20, 21]. By contrast, in 2021,

12% of the 526 deaths in the line of duty for US police officers were due to firearm injury (including unintentional injury), while 69% were due to COVID-19. Ninety-five percent of people killed by police are men. Black men are 2.5 times more likely to be killed by police than white men, Native American men 1.5 times, and Latino men 1.3 times more likely. Black women are 1.4 times more likely than white women to be killed by police. Asian men and women are both half as likely as white men and women to be killed by police [3••, 22•, 23••].

While there is no comprehensive data source that accurately reflects fatalities and nonfatal injuries caused by police [24], healthcare data suggests at least 50,000 Americans visit an Emergency Department each year for an injury caused by police [25], with common causes of injuries including being struck or hit, tasers, and tear gas [25, 26]. A recent analysis of the national trauma databank revealed 1,091 civilians shot by law enforcement officers over three years. The majority of those shot by officers and treated in participating trauma centers were male and were civilians, but unfortunately this study did not evaluate race [27]. Racial disparities do extend to nonfatal injuries [28, 29]. While the ratio of injuries to arrests are roughly consistent across racial and ethnic groups [26], underlying disparities in arrest rates lead to disproportionately high injury rates among Black, Native American, and Latinx individuals.

The harms of police killings also extend beyond the victims and their families to broad, negative effects on the mental health of Black Americans [30••, 31]. Police violence leads to “collective anger, grief, and hopelessness” in affected communities [4, 32]. Excessive police use of force accompanied by chronically inadequate apprehension and prosecution of perpetrators of violence adds to feelings of powerlessness in Black communities [4]. In addition to promoting violence by impairing police-community cooperation, intensive policing can impair individual and community health through direct effects on mental health and well-being, and by deterring individuals from seeking healthcare [6, 9••].

Efforts to understand and prevent law enforcement-associated injuries and deaths are limited by a paucity of data on the frequency and circumstances of these injuries, which are underestimated in national vital statistics data [19•, 20, 24]. The National Violent Death Reporting System (NVDRS) collects detailed data on the circumstances of violent deaths from healthcare, law enforcement, and other agencies. NVDRS counts have been validated with crowdsourced data sources, and as the system expands to include all 50 states, will provide valuable detail on killings by police [18, 19•], allowing researchers, communities, and policy makers require an in-depth understanding of the circumstances, practices, and policies that contribute to these injuries, and of their alternatives.

Law Enforcement Presence in Trauma and Emergency Care Spaces

Trauma patients often encounter law enforcement officers in the course of their clinical care. This exposure can complicate both their treatment and their experience of care, and puts patients at risk for retraumatization, in contradiction to the principles of trauma-informed care. While patients who seek law enforcement assistance should of course be allowed to do so, police presence concurrent to care can weaken collaborative decision-making between patients and providers, decrease information-sharing, and exacerbate barriers to accessing medication and resources for recovery [33], as well as interfering with patient privacy [34•]. Patients have reported intentionally minimizing symptoms and withholding accurate information from clinicians out of fear this information would be shared with police officers [33]. Law enforcement presence in hospitals may also reinforce clinicians' negative perceptions of injured patients who may be perceived as criminals or to blame for their own injuries [35].

The overlap of law enforcement and clinical care can impinge upon patients' legal rights and opportunities, as clinicians and hospitals commonly provide access to patients' protected health information and their belongings. While patients may have the right to consent to police questioning, medical vulnerability and clinician involvement may impede their ability to protect themselves [36••].

Emergency Department staff also call upon police to provide protection from patient or visitor violence. The American College of Emergency Physicians recommendations for preventing workplace violence include deployment of security personnel, surveillance, and coordination with local law enforcement [37, 38], but the efficacy of this strategy is unclear [39, 40]. Proven strategies to decrease workplace violence include interdisciplinary teams trained in patient-centered care and de-escalation techniques [41–44, 45•, 46]. Consistently, increased law enforcement presence has been associated with increased perception of safety from clinicians [47–50], but little is known about its impact on concrete safety metrics. Isolated, disastrous examples include at least two cases of patients shot and killed by police within the hospital [51, 52]. Moreover, the impact of police presence on the experiences of patients, ancillary staff, and visitors has been little explored, nor have the potentially divergent perspectives of clinicians of color.

Racial Disparities in Exposure to Law Enforcement

Where law enforcement and criminal justice are seen as effective, community members are more likely to trust and rely on police and are more likely to cooperate with

investigations that may contribute to public safety. Municipal and state police agencies are only part of a complex criminal legal system in the USA, which includes federal law enforcement, courts, and correctional institutions, but they are generally the first and most frequent point of contact for civilians. Incidents of police violence impair that trust, leading to fewer 911 calls and less information-sharing [53]. Communities of color and poor communities are often characterized by both chronic over-policing and ineffective criminal justice that can further exacerbate these dynamics [14, 32, 54].

Criminalization of poverty is a key route to criminal legal exposure. In the context of inadequate housing support and aggressive eviction policies across the USA, housing unstable and homeless individuals are often cited and charged for minor offenses like sleeping or urinating in public, best understood as crimes of survival [55]. The USA is also one of only two nations to currently use a cash bail system. As an individual under arrest can be jailed indefinitely if they cannot supply an often-arbitrary monetary sum, 3 in 4 individuals in local jails have not been convicted. These detentions can last months or years, further interrupting educational or employment opportunities, disrupting and separating families, and widening racial inequalities [56, 57]. Furthermore, the majority of people in the federal criminal justice system have not actually been convicted of a crime and are imprisoned via guilty plea, with just 2% of federal criminal defendants going to trial in 2018 [58].

Mental illness and substance use are key health concerns that are often shunted to the expansive criminal legal system, rather than to care spaces. The USA has 14 public psychiatric beds per 100,000 people, the same number as in 1850 [59]. Those who experience a psychiatric crisis in public are often arrested. And without access to financial support, crimes of survival are common. Nationwide, 40% of individuals with a severe mental illness will have spent some time in their lives in either jail, prison, or community corrections [60]. However, only one in three individuals in prison and one in six individuals in jail reported receiving mental health services while incarcerated [61]. Indeed, individuals are at higher risk for recidivism, hospitalization, and suicide upon release [62, 63].

Since the start of the “War on Drugs” in 1973, drug offenses have become the largest category of arrest, tripling since 1982 to 1.6 million in 2018 [64]. Despite similar rates of drug use among racial and ethnic groups, Black and Latinx Americans are more often arrested, prosecuted, and convicted than white Americans, and serve longer sentences [65], with the arrest rate for Black individuals more than threefold higher than for white individuals [66]. Differential enforcement accounts for a portion of this disparity, but structural inequity is also key. Beginning in 1986, for example, possession of 5 g of crack cocaine, which was

more commonly used by poor and Black people, triggered a 5-year sentence in federal prison. It took 500 g of powder cocaine, more commonly used by wealthy and white people, to garner the same sentence [67].

Differential exposure to policing and the criminal legal system constitutes a form of structural racism that contributes directly to individual and community harm, but also to the disparate impact of incarceration on the health of individuals and communities of color.

Impact of Incarceration on Health

In addition to the fundamental harm of loss of freedom, incarceration has negative impacts on the health of individuals during and after their incarceration and on the health of their families and communities. Incarcerated individuals have elevated risks of chronic conditions including cardiovascular disease, hypertension, diabetes, kidney disease, hepatitis, and HIV [68–70]. One in three people in prison and two out of five people in jail have a least one disability including deficits in hearing, vision, cognition, ambulation, self-care, and independent living [71]. There are no uniform standards or independent oversight for health care delivered in jails and prisons, and inadequate care is common [72, 73]. Additionally, a recent multi-center study found that nearly half of incarcerated individuals with surgical diagnoses were due to trauma, highlighting the risk of self-harm and assault while incarcerated [74].

There is a 12-fold increase in all-cause mortality in the first 2 weeks after release from prison [75]. In the longer term, formerly incarcerated individuals often lack access to education and employment. They are excluded from many jobs, grants, and federal assistance programs. Stigma based on their status as formerly incarcerated compounds these disadvantages and threatens families' economic stability [76, 77]. Financial strain and poverty caused by legal expenses due to arrests and incarcerations affect the health of Black people by limiting access to healthy food, safe housing, and healthcare [4]. Incarceration of a family member negatively affects the well-being and life expectancy of family members [78, 79, 80]. Community level incarceration rates have been associated with pre-term births and low-weight births among women living in areas with high rates of incarceration [81].

Role of Law Enforcement in Injury Prevention

Police investigation has the potential to prevent injury due to recurrent or escalating violence. To address the upstream causes of violence proactively, law enforcement agencies are most effective when they collaborate with other sectors

and communities [82]. The Cardiff Model is the most prominent example of cross-sector effort for injury and violence prevention. Named for its birthplace in Cardiff, Wales, this approach combines healthcare data with law enforcement data in space and time to identify local “hotspots” of violence [83, 84]. Successful implementation sites in Europe and the USA have found that combining these data sources more accurately depicts the social and structural conditions contributing to violence [85–87]. This in turn enables cross-sector design of locally relevant prevention strategies. For example, by combining data from a trauma center registry and police report registry, a specific commercial street with bars and restaurants may be identified as the nexus of a rising rate of late-night assaults that are causing injuries treated within the local emergency department [88]. Interventions might include restrictive licensing for businesses serving alcohol, or the redesign of the safety features of pedestrian pathways. This strategy draws on the success of cross-sector traffic injury prevention efforts that have reduced injuries by developing interventions focused on the environment in which injuries occur, like roadway features, rather than efforts to educate and impact individual driver knowledge and practices [89].

Strategies to Reduce Harm Associated with Law Enforcement

Mass incarceration, injuries, illness, and deaths are not inevitable consequences of law enforcement. The USA has the highest rate of police killings among comparator countries [90], and the circumstances surrounding these deaths can inform prevention. In 2014–2015 in the USA, fewer than half of the individuals killed threatened an officer with a firearm, but more than half were impaired or suicidal at the time of the incident, suggesting the opportunity for alternative response strategies [91••]. Strategies to reduce injuries and deaths associated with law enforcement fall into two categories: those designed to reduce civilian contact with police or those designed to reduce risk of injury or death during those interactions. Reducing contact with police can include decreasing or redefining crime and eliminating police involvement in non-crime events. For example, more than half a million Americans were arrested for marijuana possession in 2019, with people of color more often arrested and more harshly sentenced [92]. In addition to the avoidable harms of incarceration, incidents of police violence that began with a marijuana-related stop or arrest are not uncommon [93, 94]. As states that have legalized medical or recreational marijuana have not seen increases in other property or violent crimes, this type of decriminalization is a promising strategy for reducing harm [95].

Reducing our reliance on police to enforce social order is a key strategy to reduce exposure to law enforcement [96]. Police respond to nearly all 911 calls including those of mental health crises, and 1 in 5 people killed by police died during a mental health crisis [91••]. Communities around the country are exploring specialized unarmed mental health response teams to decrease risk of injury and to improve access to mental healthcare. The CAHOOTS program has operated in Eugene, Oregon since the late 1980s, and its specialized teams now respond to up to 20% of 911 calls [97]. Sweden has developed similar specialized response units including mental health ambulances [98]. Likewise, some US cities have introduced efforts to limit police involvement in minor traffic violations [99]. Internationally, unarmed professionals are often deployed to respond to minor crimes and may issue fines but not make arrests [98].

Reducing risk of police contact can also involve changes to the way police are organized, trained, armed, and monitored. Whereas many countries have one or a few national police forces, policing in the USA is decentralized and training ranges widely. US police are more commonly heavily armed than those in other countries. In countries such as England, Ireland, and New Zealand, police firearms are generally limited to specially-trained units tasked with responding to designated violent incidents [98]. Countries that have had success in improving the relationship between law enforcement and the public have integrated community policing techniques and civilian oversight to promote accountability. In the USA, police misconduct or violence is primarily investigated by the police agency itself, and recent moves to strengthen civilian oversight are promising [98]. For example, half of all agencies require officers to file a report when they point a gun at a civilian even if they do not shoot, and this requirement is associated with fewer civilian deaths [100]. Likewise, police agencies with more policies limiting use of force cause fewer civilian deaths [101].

Conclusions

Traumatic injury sits at the nexus of law enforcement and structural racism. Many of the same forces of systemic disadvantage that put Black people, other people of color, and other marginalized groups at risk for violent injury also expose these same individuals and communities to intensive policing. Patients may be injured by law enforcement, or may be at risk of criminalization during or after their injuries. Traumatic injuries can contribute to future risk of policing and incarceration, all exacerbating racial health disparities. To achieve the goal of zero preventable deaths, trauma clinicians, researchers, and injury prevention professionals must understand and work to end police violence in all its forms.

Funding Dr. Kaufman is supported by AHRQ (grant 5K12 HS026372).

Declarations

Conflict of Interest The authors have no competing interests to declare.

Human and Animal Rights This article does not contain any studies with human or animal subjects performed by any of the authors.

References

Papers of particular interest, published recently, have been highlighted as:

• Of importance

•• Of major importance

1. Law Enforcement Code of Ethics [Internet]. [cited 2021 Nov 19]. Available from: <https://www.theiacp.org/resources/law-enforcement-code-of-ethics>
2. Kemper S. A public health giant: C-E.A. Winslow, who launched public health at Yale a century ago, still influential today [Internet]. YaleNews. 2015 [cited 2021 Nov 19]. Available from: <https://news.yale.edu/2015/06/02/public-health-giant-c-ea-winslow-who-launched-public-health-yale-century-ago-still-influe>
3. •• McLeod MN, Heller D, Manze MG, Echeverria SE. Police Interactions and the Mental Health of Black Americans: a Systematic Review. *J Racial Ethn Health Disparities*. 2020;7(1):10–27. **Reviews the evidence on the impact of policing on mental health of Black Americans, identifying a relationship between police contact, psychotic experiences, psychological distress, depression, PTSD, anxiety, and suicidal ideation and attempts.**
4. Alang S, McAlpine D, McCreedy E, Hardeman R. Police Brutality and Black Health: Setting the Agenda for Public Health Scholars. *Am J Public Health*. 2017;107(5):662–5.
5. Muhammed KG. *The Condemnation of Blackness: Race, Crime, and the Making of Modern Urban America* [Internet]. Cambridge, MA: Harvard University Press; 2019. [cited 2021 Nov 19]. Available from: <https://www.hup.harvard.edu/catalog.php?isbn=9780674238145>
6. Sewell AA, Jefferson KA. Collateral Damage: The Health Effects of Invasive Police Encounters in New York City. *J Urban Health*. 2016;93(1):42–67.
7. Sewell AA. The Illness Associations of Police Violence: Differential Relationships by Ethnoracial Composition. *Sociol Forum*. 2017;32(S1):975–97.
8. Jacoby SF, Richmond TS, Holena DN, Kaufman EJ. A safe haven for the injured? Urban trauma care at the intersection of healthcare, law enforcement, and race. *Soc Sci Med*. 2018;199:115–22.
9. •• Kerrison EM, Sasdewell AA. Negative illness feedbacks: High-risk policing reduces civilian reliance on ED services. *Health Serv Res*. 2020;55(S2):787–96. **Tract-level rates of frisking were associated with fewer ED visits among neighborhood residents with poor or fair health status.**
10. Brown RA. Policing in American history. *Du Bois Rev*. 2019;16(1):189–95.
11. Vitale AS. *The end of policing*. London/New York: Verso; 2017. p. 266.
12. Aggressive Policing, Health, And Health Equity | Health Affairs Brief [Internet]. [cited 2021 Nov 15]. Available from: <https://www.healthaffairs.org/doi/10.1377/hpb20210412.997570/full/>

13. Cloud DH, Parsons J, Delany-Brumsey A. Addressing mass incarceration: a clarion call for public health. *Am J Public Health*. 2014;104(3):389–91.
14. Alexander M, West C. *The new Jim Crow: mass incarceration in the age of colorblindness*. Revised. New York: New Press; 2012. p. 312.
15. Mauer M. Addressing racial disparities in incarceration. *Prison J*. 2011;91(3_suppl):87S–101S.
16. Rich JA, Grey CM. Pathways to recurrent trauma among young black men: Traumatic stress, substance use, and the “Code of the Street.” *Am J Public Health*. 2005;95(5):816–24.
17. Lee J. Wounded: Life after the shooting. *Ann Am Acad Pol Soc Sci*. 2012;642(1):244–57.
18. Fatal Force: Police shootings database [Internet]. Washington Post. [cited 2021 Nov 20]. Available from: <https://www.washingtonpost.com/graphics/investigations/police-shootings-database/>
- 19.● Conner A, Azrael D, Lyons VH, Barber C, Miller M. Validating the National Violent Death Reporting System as a Source of Data on Fatal Shootings of Civilians by Law Enforcement Officers. *Am J Public Health*. 2019;109(4):578–84. **Validates the NVDRS as an accurate source of counts of civilians killed by police, when compared to crowdsourced and private data sources.**
20. Bui AL, Coates MM, Matthay EC. Years of life lost due to encounters with law enforcement in the USA, 2015–2016. *J Epidemiol Commun Health*. 2018;72(8):715–8.
21. DeGue S, Fowler KA, Calkins C. Deaths due to use of lethal force by law enforcement: Findings from the national violent death reporting system, 17 U.S. States, 2009–2012. *Am J Prev Med*. 2016;51(5 Suppl 3):S173–87.
- 22.● Lett E, Asabor EN, Corbin T, Boatright D. Racial inequity in fatal US police shootings, 2015–2020. *J Epidemiol Commun Health*. 2020. <https://doi.org/10.1136/jech-2020-215097>. **Identifies a constant rate of fatal police shootings, 2015–2020, and significantly higher rates of death for Black, Indigenous, and People of Color compared with whites (Native American RR=3.06, Black RR=2.62, Hispanic RR=1.29) and among unarmed victims (Black RR=3.18, Hispanic RR=1.45).**
- 23.●● Edwards F, Lee H, Esposito M. Risk of being killed by police use of force in the United States by age, race–ethnicity, and sex. *PNAS*. 2019;116(34):16793–8. **Found that African American men and women, American Indian/Alaska Native men and women, and Latino men face higher lifetime risk of being killed by police than do their white peers, while Latina women and Asian/Pacific Islander men and women face lower risk of being killed by police than do their white peers. Risk is highest for black men, who (at current levels of risk) face about a 1 in 1,000 chance of being killed by police over the life course.**
24. Krieger N, Chen JT, Waterman PD, Kiang MV, Feldman J. Police killings and police deaths are public health data and can be counted. *PLoS Med*. 2015;12(12):e1001915.
25. Kaufman EJ, Karp DN, Delgado MK. US emergency department encounters for law enforcement-associated injury, 2006–2012. *JAMA Surg*. 2017;152(6):603–5.
26. Miller TR, Lawrence BA, Carlson NN, Hendrie D, Randall S, Rockett IR, et al. Perils of police action: a cautionary tale from US data sets. *Inj Prev*. 2017;23(1):27–32. <https://doi.org/10.1136/injuryprev-2016-042023>.
27. Liasidis PK, Lewis M, Jakob DA, Inaba K, Demetriades D. Firearm injuries during legal interventions Nationwide analysis. *J Trauma Acute Care Surg*. 2021;91(3):465–72.
28. Schellenberg M, Inaba K, Cho J, Tatum JM, Barmparas G, Strumwasser A, Grabo D, Bir C, Eastman A, Demetriades D. Injuries sustained during contact with law enforcement: An analysis from US trauma centers. *J Trauma Acute Care Surg*. 2017;83(6):1124–8.
29. Mooney AC, McConville S, Rappaport AJ, Hsia RY. Association of Legal Intervention Injuries With Race and Ethnicity Among Patients Treated in Emergency Departments in California. *JAMA Netw Open*. 2018;1(5):e182150.
- 30.●● Bor J, Venkataramani AS, Williams DR, Tsai AC. Police killings and their spillover effects on the mental health of black Americans: a population-based, quasi-experimental study. *Lancet*. 2018;392(10144):302–10. **This natural experiment study identifies more poor mental health days in Black Americans who lived in areas where police shootings of unarmed Black men had occurred, with the greatest effect in the first 2 months after a shooting.**
31. Geller A, Fagan J, Tyler T, Link BG. Aggressive Policing and the Mental Health of Young Urban men. *Am J Public Health*. 2014;104(12):2321–7.
32. Anderson E. The Code of the Streets [Internet]. The Atlantic. 1994. [cited 2021 Oct 13]. Available from: <https://www.theatlantic.com/magazine/archive/1994/05/the-code-of-the-streets/306601/>
33. Liebschutz J, Schwartz S, Hoyte J, Conoscenti L, Christian AB, Muhammad L, Harper D, James T. A Chasm Between Injury and Care: Experiences of Black Male Victims of Violence. *J Trauma*. 2010;69(6):1372–8.
- 34.● Harada MY, Lara-Millán A, Chalwell LE. Policed Patients: How the Presence of Law Enforcement in the Emergency Department Impacts Medical Care. *Annals of Emergency Medicine* [Internet]. 2021. [cited 2021 Aug 8]; Available from: <https://www.sciencedirect.com/science/article/pii/S0196064421003802>. **Qualitative interviews of ED physicians characterized mixed experiences with law enforcement in the ED. Officers were helpful and collegial at times, but at other times interrupted treatment or disrupted patient privacy.**
35. Patton D, Sodhi A, Affinati S, Lee J, Crandall M. Post-Discharge Needs of Victims of Gun Violence in Chicago: A Qualitative Study. *J Interpers Violence*. 2019;34(1):135–55.
- 36.●● Song JS. Policing the Emergency Room. *Harv Law Rev*. 2021;134(8):2647–719. **Law review article summarizing the policy and doctrine relevant to law enforcement activity in the ED. Song argues that EDs should serve as sanctuaries for patients, rather than as extensions of the public street.**
37. American College of Emergency Physicians. Protection from physical violence in the emergency department environment. Policy statement. *Ann Emerg Med*. 2011;58(4):405. <https://doi.org/10.1016/j.annemergmed.2011.07.018>.
38. Odes R, Hong O, Harrison R, Chapman S. Factors associated with physical injury or police involvement during incidents of workplace violence in hospitals: Findings from the first year of California’s new standard. *Am J Ind Med*. 2020;63(6):543–9.
39. Behnam M, Tillotson RD, Davis SM, Hobbs GR. Violence in the Emergency Department: A National Survey of Emergency Medicine Residents and Attending Physicians. *J Emerg Med*. 2011;40(5):565–79.
40. Rankins RC, Hendey GW. Effect of a security system on violent incidents and hidden weapons in the emergency department. *Ann Emerg Med*. 1999;33(6):676–9.
41. Jones CD, Manno MS, Vogt B. Tier one alert! A psychiatric rapid response team. *Nurs Manage*. 2012;43(11):34–40.
42. Pestka EL, Hatteberg DA, Larson LA, Zwygart AM, Cox DL, Borgen EE. Enhancing safety in behavioral emergency situations. *Medsurg Nurs*. 2012;21(6):335–41.
43. Kelley EC. Reducing Violence in the Emergency Department: A Rapid Response Team Approach. *J Emerg Nurs*. 2014;40(1):60–4.
44. Parker CB, Calhoun A, Wong AH, Davidson L, Dike C. A Call for Behavioral Emergency Response Teams in Inpatient Hospital Settings. *AMA J Ethics*. 2020;22(11):E956–964.

45. ● Roppolo LP, Morris DW, Khan F, Downs R, Metzger J, Carder T, Wong AH, Wilson MP. Improving the management of acutely agitated patients in the emergency department through implementation of Project BETA (Best Practices in the Evaluation and Treatment of Agitation). *J Am Coll Emerg Physicians Open*. 2020;1(5):898–907. **Describes the implementation of a behavioral response protocol to reduce risk of patient assaults in the ED.**
46. Richmond J, Berlin J, Fishkind A, Holloman G, Zeller S, Wilson M, Rifai MA, Ng A. Verbal de-escalation of the agitated patient: consensus statement of the American Association for Emergency Psychiatry Project Beta de-escalation workgroup. *WestJEM*. 2012;13(1):17–25.
47. Kansagra SM, Rao SR, Sullivan AF, Gordon JA, Magid DJ, Kaushal R, Camargo CA Jr, Blumenthal D. A survey of workplace violence across 65 U.S. emergency departments. *Acad Emerg Med*. 2008;15(12):1268–74.
48. Blando JD, O'Hagan E, Casteel C, Nocera M-A, Peek-Asa C. Impact of hospital security programmes and workplace aggression on nurse perceptions of safety. *J Nurs Manag*. 2013;21(3):491–8.
49. Pane GA, Winiarski AM, Salness KA. Aggression directed toward emergency department staff at a university teaching hospital. *Ann Emerg Med*. 1991;20(3):283–6.
50. Kowalenko T, Walters BL, Khare RK, Compton S. Workplace Violence: A Survey of Emergency Physicians in the State of Michigan. *Ann Emerg Med*. 2005;46(2):142–7.
51. Mather K, Smith D. Police shoot, kill suspect at Harbor-UCLA emergency room, LAPD says [Internet]. Los Angeles Times. 2015 [cited 2021 Nov 21]. Available from: <https://www.latimes.com/local/lanow/la-me-ln-officer-involved-shooting-20151219-story.html>
52. Tchekmedyian A. Questions remain following deputy shooting at Harbor-UCLA that wounded patient. Los Angeles Times [Internet]. 2020. [cited 2021 Nov 21]; Available from: <https://www.latimes.com/california/story/2020-10-13/hospital-workers-protect-sheriff-violence>
53. Desmond M, Papachristos AV, Kirk DS. Police Violence and Citizen Crime Reporting in the Black Community. *Am Sociol Rev*. 2016;81(5):857–76.
54. In Pursuit of Peace: Building Police-Community Trust to Break the Cycle of Violence [Internet]. Giffords. [cited 2021 Aug 9]. Available from: <https://giffords.org/lawcenter/report/in-pursuit-of-peace-building-police-community-trust-to-break-the-cycle-of-violence/>
55. Greenberg GA, Rosenheck RA. Jail incarceration, homelessness, and mental health: a national study. *Psychiatr Serv*. 2008;59(2):170–7.
56. Monaghan J, van Holm EJ, Surprenant CW. Get Jailed, Jump Bail? The Impacts of Cash Bail on Failure to Appear and Re-Arrest in Orleans Parish. *Am J Crim Just* [Internet]. 2020. [cited 2021 Nov 21]; published on-line ahead of print. Available from: <https://doi.org/10.1007/s12103-020-09591-9>
57. Sawyer W, Wagner P. Mass Incarceration: The Whole Pie 2020 [Internet]. New York, NY: Prison Policy Initiative; [cited 2021 Nov 22]. Available from: <https://www.prisonpolicy.org/reports/pie2020.html>
58. Trials are rare in the federal criminal justice system, and when they happen, most end in convictions [Internet]. Pew Research Center; 2019. [cited 2022 Feb 17]. Available from: https://www.pewresearch.org/wp-content/uploads/2019/06/FT_19.06.11_trial_and_guilty_pleas_pie-2.png
59. Torrey EF, Fuller DA, Gelller J, Jacobs C, Ragosta K. No [Internet]. Arlington, VA: Treatment Advocacy Center; 2012 [cited 2021 Nov 20]. Available from: <http://tacreports.nonprofitsoap-box.com/bedstudy>
60. Torrey EF, Kennard AD, Eslinger D, Lamb R, Pavle J. More Mentally Ill Persons Are in Jails and Prisons Than Hospitals: A Survey of the States | Office of Justice Programs [Internet]. Arlington, VA: Treatment Advocacy Center and National Sheriffs Association; 2010. [cited 2021 Nov 21]. Available from: <https://www.ojp.gov/ncjrs/virtual-library/abstracts/more-mentally-ill-persons-are-jails-and-prisons-hospitals-survey>
61. Daniel AE. Care of the Mentally Ill in Prisons: Challenges and Solutions. *J Am Acad Psych Law Online*. 2007;35(4):406–10.
62. Kouyoumdjian FG, McIsaac KE, Liauw J, Green S, Karachwalla F, Siu W, Burkholder K, Binswanger I, Kiefer L, Kinner SA, Korchinski M, Matheson FI, Young P, Hwang SW. A systematic review of randomized controlled trials of interventions to improve the health of persons during imprisonment and in the year after release. *Am J Public Health*. 2015;105(4):e13–33.
63. Al-Rousan T, Rubenstein L, Sieleni B, Deol H, Wallace RB. Inside the nation's largest mental health institution: a prevalence study in a state prison system. *BMC Public Health*. 2017;17(1):342.
64. Lynch M. Theorizing the role of the 'war on drugs' in US punishment. *Theor Criminol*. 2012;16(2):175–99.
65. Western B. Punishment and inequality in America. New York: Russell Sage Foundation; 2006.
66. Race, Drugs, and Law Enforcement in the United States [Internet]. New York, NY: Human Rights Watch; 2009. [cited 2021 Nov 22]. Available from: <https://www.hrw.org/news/2009/06/19/race-drugs-and-law-enforcement-united-states>
67. H.R.5484 - 99th Congress (1985–1986): Anti-Drug Abuse Act of 1986 [Internet]. Oct 27, 1986. Available from: <https://www.congress.gov/bills/99th-congress/house-bill/5484>
68. Schnittker J, Massoglia M, Uggen C. Out and down: incarceration and psychiatric disorders. *J Health Soc Behav*. 2012;53(4):448–64.
69. Massoglia M, Pridemore WA. Incarceration and Health. *Annu Rev Sociol*. 2015;41(1):291–310.
70. Wang EA, Pletcher M, Lin F, Vittinghoff E, Kertesz SG, Kiefe CI, Bibbins-Domingo K. Incarceration, Incident Hypertension, and Access to Healthcare: Findings from the Coronary Artery Risk Development in young Adults (CARDIA) Study. *Arch Intern Med*. 2009;169(7):687–93.
71. Bronson J, Stroop J, Zimmer S, Berzofsky M. Drug use, dependence, and abuse among state prisoners and jail inmates, 2007–2009: Special report. 2017. [cited 2021 Nov 21]; Available from: <https://www.rti.org/publication/drug-use-dependence-and-abuse-among-state-prisoners-and-jail-inmates-2007-2009>
72. Olson MG, Khatri UG, Winkelman TNA. Aligning Correctional Health Standards With Medicaid-Covered Benefits. *JAMA Health Forum*. 2020;1(7):e200885.
73. Wilper AP, Woolhandler S, Boyd JW, Lasser KE, McCormick D, Bor DH, Himmelstein DU. The health and health care of US prisoners: results of a nationwide survey. *Am J Public Health*. 2009;99(4):666–72.
74. Bryant M, Tatebe L, Siva N, Udekwu P, Wurzelmann M, Crandall ML, Diaz-Zuniga Y, Tran V, Santos A, Krause C, Turay D, Nordham K, Taghavi S, Dreesen E, Scarlet S, Snyder A, Applewhite M, Patel P, Schroepel T, Rodriguez J, Kornblith LZ, Boeck MA, Bonne SL, Tufariello A, Maine R. Outcomes After Emergency General Surgery And Trauma Care In Incarcerated Individuals: An EAST Multi-Center Study. In 2022. Available from: " Paper 11, Scientific Session 11. https://www.east.org/content/documents/2022_east_abstracts_sci_papers.pdf
75. Binswanger IA, Blatchford PJ, Mueller SR, Stern MF. Mortality after prison release: opioid overdose and other causes of death, risk factors, and time trends from 1999 to 2009. *Ann Intern Med*. 2013;159(9):592–600.
76. Wakefield S, Uggen C. Incarceration and Stratification. *Annu Rev Sociol*. 2010;36(1):387–406.

77. Harris A, Evans H, Beckett K. Drawing Blood from Stones: Legal Debt and Social Inequality in the Contemporary United States. *Am J Sociology*. 2010;115(6):1753–99.
78. ● Sundaresh R, Yi Y, Harvey TD, Roy B, Riley C, Lee H, Wildeman C, Wang EA. Exposure to family member incarceration and adult well-being in the United States. *JAMA Netw Open*. 2021;4(5):e2111821. **Nationally-representative survey found that any family association was associated with lower well-being overall and in physical, emotional, and social domains.**
79. Lee H, Wildeman C, Wang EA, Matusko N, Jackson JS. A heavy burden: the cardiovascular health consequences of having a family member incarcerated. *Am J Public Health*. 2014;104(3):421–7.
80. Goldman AW. Linked Lives in Double Jeopardy: Child Incarceration and Maternal Health at Midlife. *J Health Soc Behav*. 2019;60(4):398–415.
81. Dyer L, Hardeman R, Vilda D, Theall K, Wallace M. Mass incarceration and public health: the association between black jail incarceration and adverse birth outcomes among black women in Louisiana. *BMC Pregnancy Childbirth*. 2019;19:525.
82. Anderson E, Burris S. Policing and public health: Not quite the right analogy. *Pol Soc*. 2017;27(3):300–13.
83. Brennan I, Shepherd J. Integrating Emergency Department and Police Data to Locate and Prevent Violence: The Cardiff Model. *Geogr Public Saf*. 2012;3(2):3–5.
84. Shepherd JP, Sumner SA. Policing and Public Health—Strategies for Collaboration. *JAMA*. 2017;317(15):1525.
85. Levas MN, Hernandez-Meier JL, Kohlbeck S, Piotrowski N, Hargarten S. Integrating population health data on violence into the Emergency Department: A feasibility and implementation study. *J Trauma Nurs*. 2018;25(3):149–58.
86. Mercer Kollar LM, Sumner SA, Bartholow B, Wu DT, Moore JC, Mays EW, Atkins EV, Fraser DA, Flood CE, Shepherd JP. Building capacity for injury prevention: a process evaluation of a replication of the Cardiff Violence Prevention Programme in the Southeastern USA. *Inj Prev*. 2020;26(3):221–8.
87. Boyle AA, Snelling K, White L, Ariel B, Ashelford L. External validation of the Cardiff model of information sharing to reduce community violence: natural experiment. *Emerg Med J*. 2013;30(12):1020–3.
88. Moore SC, Brennan I, Murphy S. Predicting and measuring premises-level harm in the night-time economy. *Alcohol Alcohol*. 2011;46(3):357–63.
89. Jacoby SF, Kollar LMM, Ridgeway G, Sumner SA. Health system and law enforcement synergies for injury surveillance, control and prevention: a scoping review. *Inj Prev*. 2018;24(4):305–11.
90. Jones A, Sawyer W. Not just “a few bad apples”: U.S. police kill civilians at much higher rates than other countries [Internet]. Prison Policy Initiative; 2020. [cited 2021 Jun 10]. Available from: <https://www.prisonpolicy.org/blog/2020/06/05/policekillings/>
91. ●● Wertz J, Azrael D, Berrigan J, Barber C, Nelson E, Hemenway D, Salhi C, Miller M. A Typology of Civilians Shot and Killed by US Police: a Latent Class Analysis of Firearm Legal Intervention Homicide in the 2014–2015 National Violent Death Reporting System. *J Urban Health*. 2020;97(3):317–28. **Analysis of civilians killed by police to define types of circumstances leading to these deaths.**
92. Persons Arrested [Internet]. FBI. [cited 2021 Jun 29]. Available from: <https://ucr.fbi.gov/crime-in-the-u.s/2019/crime-in-the-u.s.-2019/topic-pages/persons-arrested>
93. Ingraham C. Analysis : Marijuana really can be deadly, but not in the way you probably expect. *Washington Post* [Internet]. 2016. [cited 2021 Nov 20]; Available from: <https://www.washingtonpost.com/news/wonk/wp/2016/09/28/marijuana-really-can-be-deadly-but-not-in-the-way-you-probably-expect/>
94. Alexander C. Stop Justifying Police Killings Based on Alleged Marijuana Use [Internet]. Drug Policy Alliance. 2017 [cited 2021 Jun 29]. Available from: <https://drugpolicy.org/blog/stop-justifying-police-killings-based-alleged-marijuana-use>
95. Wu G, Wen M, Wilson FA. Impact of recreational marijuana legalization on crime: Evidence from Oregon. *J Crim Just*. 2021;72:101742.
96. Campaign Zero [Internet]. Campaign Zero. [cited 2021 Jun 30]. Available from: <https://www.joincampaignzero.org>
97. Gerety RM. An Alternative to Police That Police Can Get Behind. *The Atlantic* [Internet]. 2020. [cited 2021 Jun 29]; Available from: <https://www.theatlantic.com/politics/archive/2020/12/cahoots-program-may-reduce-likelihood-of-police-violence/617477/>
98. Cheatham A, Maizland L. What Are Police Like in Other Countries? [Internet]. New York, NY: Council on Foreign Relations; 2021. [cited 2021 Jun 29]. Available from: <https://www.cfr.org/backgrounders/how-police-compare-different-democracies>
99. City Council Approves Councilmember Thomas’ Driving Equality Bill [Internet]. Philadelphia City Council. 2021 [cited 2021 Nov 20]. Available from: <https://phlcouncil.com/city-council-approves-councilmember-thomas-driving-equality-bills/>
100. Jennings JT, Rubado ME. Preventing the Use of Deadly Force: The Relationship between Police Agency Policies and Rates of Officer-Involved Gun Deaths. *Public Admin Rev*. 2017;77(2):217–26.
101. McKesson D, Sinyangwe S, Elzie J, Packnett B. Police Use of Force Policy Analysis [Internet]. Campaign Zero; 2016. [cited 2021 Jun 30]. Available from: <https://campaignzero.org/reports>

Publisher’s Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.