

Overrepresentation of Individuals with Traumatic Brain Injury in the Criminal Justice System

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OBJECTIVES

1. Name the common risk factors for traumatic brain injury and involvement in the criminal justice system.
2. Describe common limitations and confounds in research on the correlation between brain injury and criminal justice involvement and identify areas for future research.
3. Review advocacy efforts related to overrepresentation of individuals with traumatic brain injury in the criminal justice system.

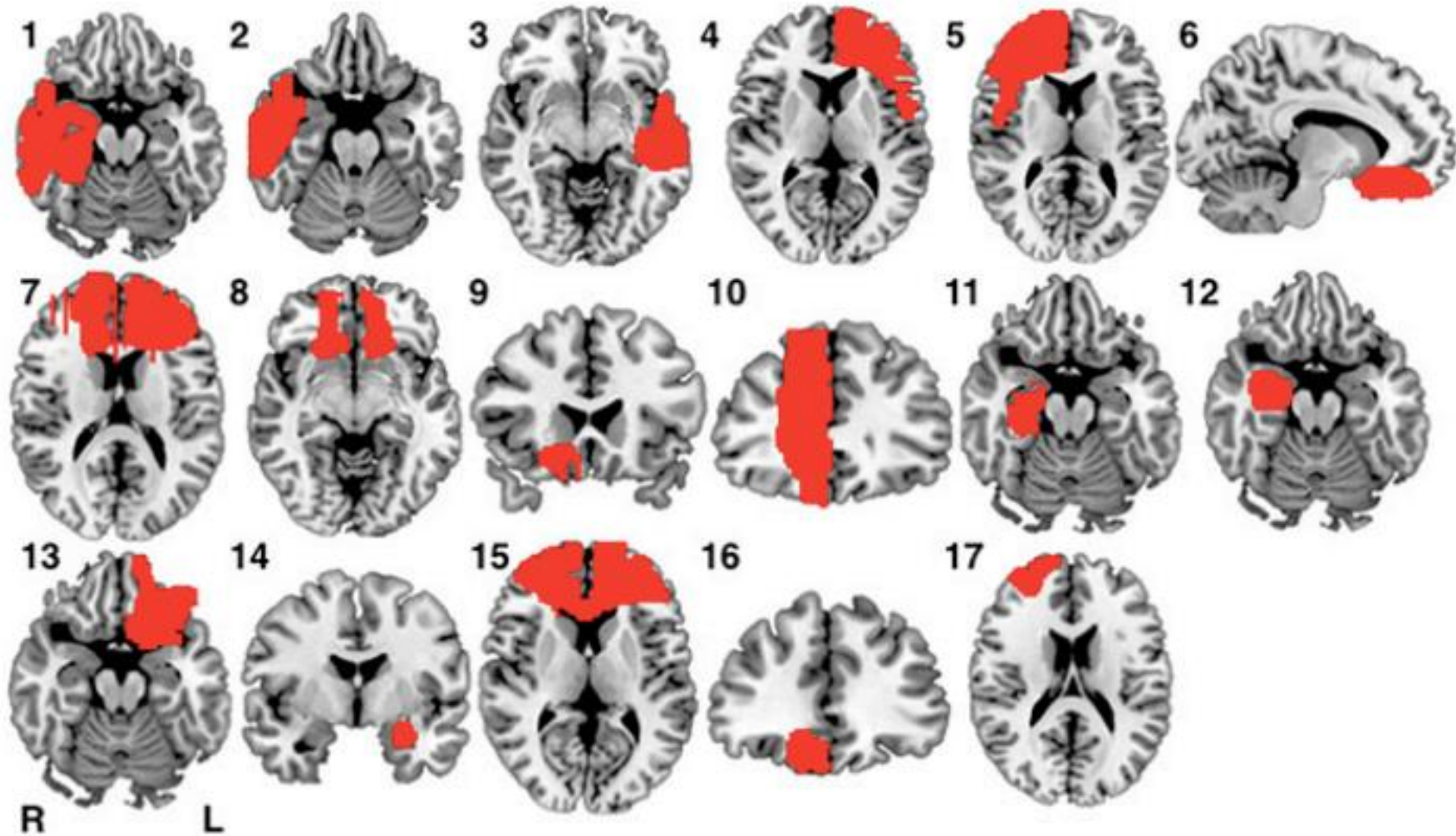
SCOPE OF THE CONCERN

- Within five years following a TBI, nearly 1 out of 3 individuals report involvement with the criminal justice system (Farrer & Hedges, 2011).
- While 8.5% of the general population report a history of TBI, 25-87% of inmates report a history of head injury or TBI (Morrell, Merbitz, Jain, & Jain, 1998; Silver, Kramer, Greenwald, & Weissman, 2001; Slaughter, Fann, & Ehde, 2003; Schofield, Hollis, Smith, Lee, & Kelsom, 2006).

Phineas Gage and the History of “Acquired Sociopathy”

- As a case study, Mr. Gage is considered the most well know; he continues to be a fixture in neurology, psychology, and neuroscience curricula (Barker, 1995)
 - In contrast with popular conception, Macmillan and Lena (2010) argue that Mr. Gage made a strong psychosocial recovery.





Lesions temporally associated with criminal behavior. Lesions from 17 patients with acquired criminal behavior, manually traced onto a common brain atlas (MNI). From Darby, Horn, Cushman, & Fox, 2017.

Sat, Sep 15, 2018

Newsweek

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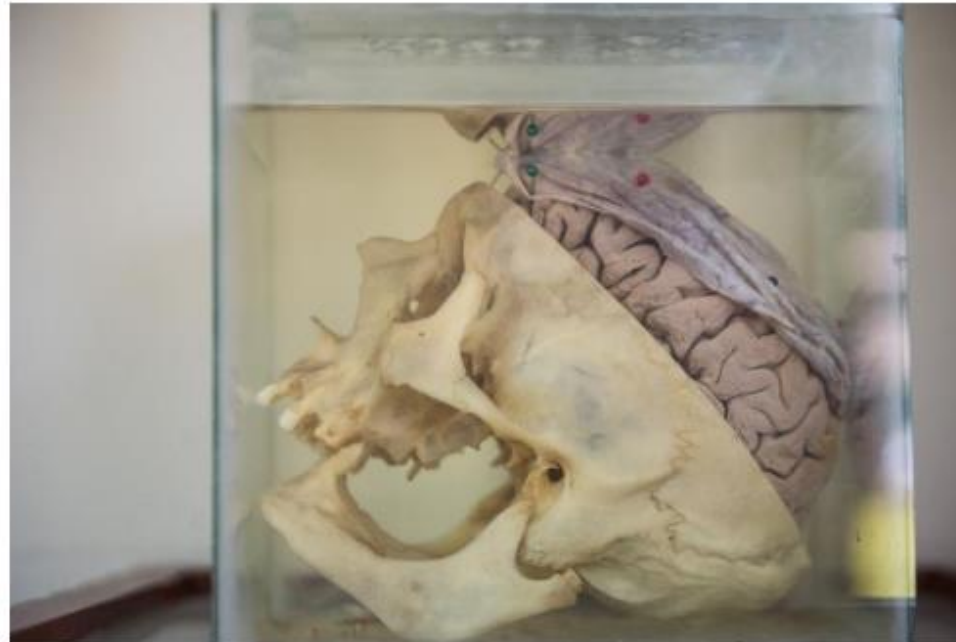
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TECH & SCIENCE

BRAIN INJURIES MAY BE A HIDDEN CAUSE OF CRIMINAL BEHAVIOR

BY JOSEPH FRANKEL ON 12/18/17 AT 3:33 PM



A glass container with a human skull at the museum of neuropathology in Lima, Peru.

ERNESTO BENAVIDES/GETTY

Brain injuries can cause some people to become violent criminals and pedophiles — here's what scientists know so far about why that is

Lindsay Dodgson Feb. 10, 2018, 9:16 AM



JC Gellidon / Unsplash

RESPONSE TO DARBY ET AL.

“The study design [by Darby et al.] cannot establish a causal relationship. It relied on identifying brain lesions in 17 published cases, which is a small number, and testing them in a further 23 published reports. In a comprehensive review of the literature...we identified 35 studies that looked at brain regions that were associated with violence, which was based on 1288 participants.

Importantly, we found the most common finding was that there was no difference in grey matter volume in individuals who had violent outcomes compared to control populations, *even in the prefrontal cortex and temporal lobes.*

This underscores the importance of interpreting individual studies in the context of the wider literature. In addition, there are limitations in drawing on single case reports, as has been done here, as these **reports tend only to be written up and also published if a positive association with a brain lesion is found.** It is likely, however, that there are many other single cases that found no such association, and were never written up for publication.”

The New York Times

*Las Vegas Gunman's Brain Exam
Only Deepens Mystery of His Actions*



Stephen Paddock. via Associated Press

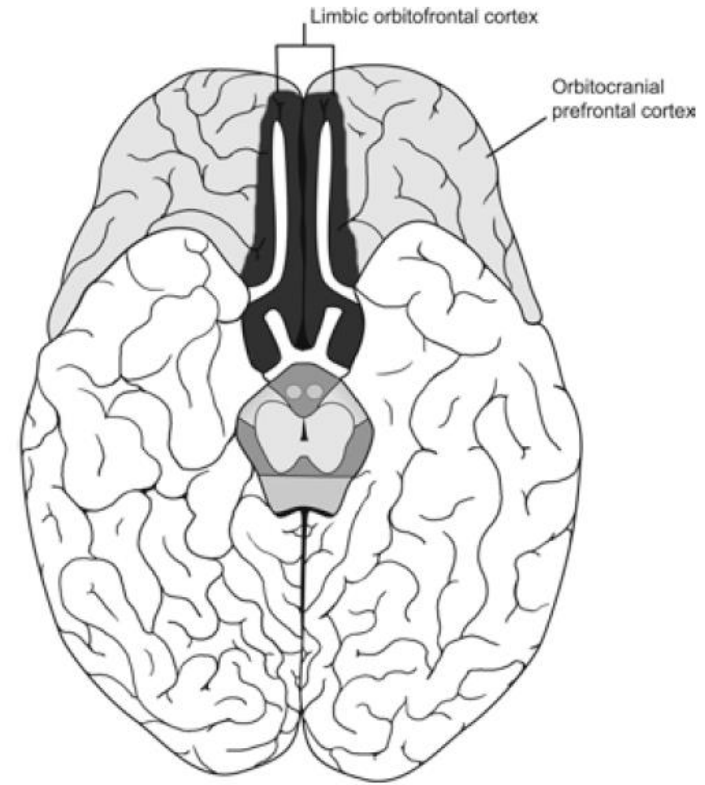
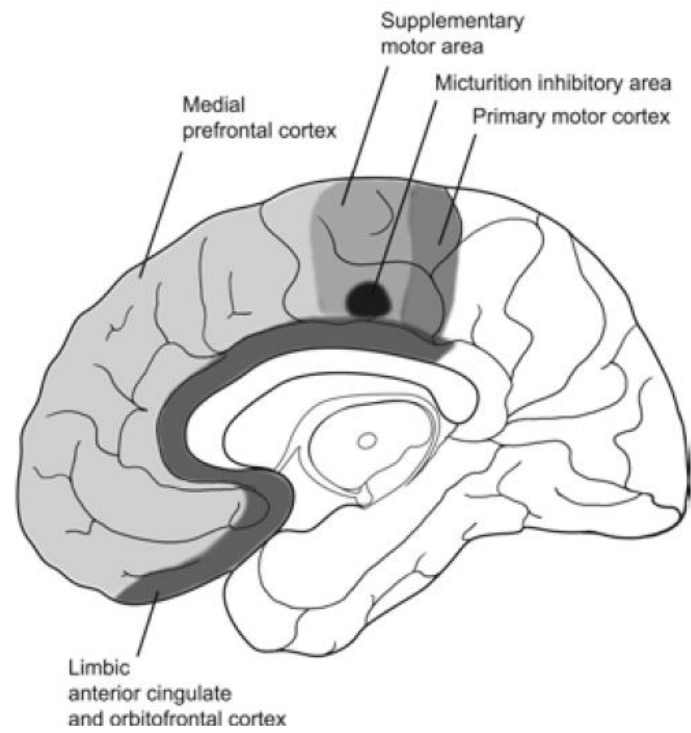
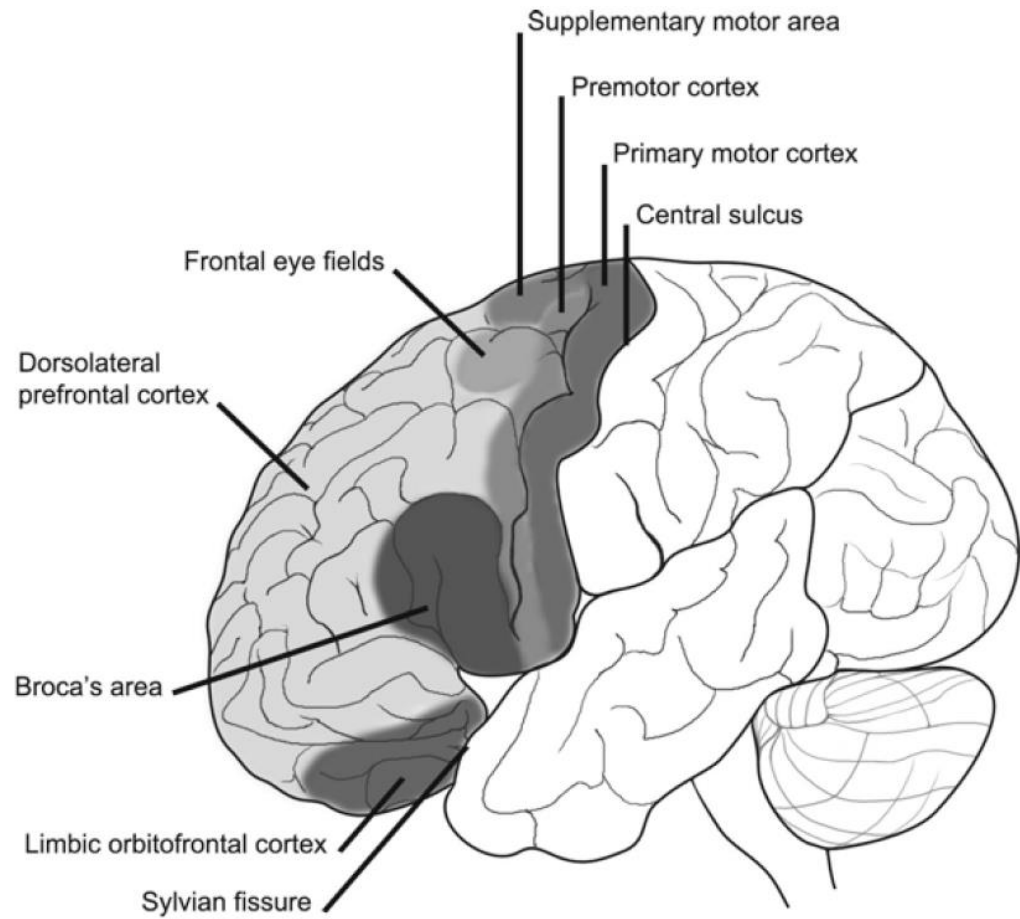
Dorsolateral Prefrontal (Dysexecutive) Syndrome

- **Poor problem solving** (concrete and rigid).
- **Poor organizational strategies.**
- **Impaired executive abilities** (set-shifting, perseveration, and impersistence).
- **Memory** may be disrupted: reduced working memory, encoding/retrieval strategies, and temporal organization (order). Retrieval improved with recognition cues.
- **Apathy** and psychomotor slowing. Poor motivation/abulia
- **Decreased emotional range.** May appear uncaring or emotionally unresponsive.
- Contralateral upper extremity weakness.

Orbitofrontal (Disinhibited/Pseudopsychopathy) Syndrome

- **Disinhibited:** hyperactive, intrusive, pressured behavior
- **Poor impulse control:** loss of social insight, poor situational awareness
- **Distractible:** focus on single thing and unable to selectively guide attention away from competing stimuli
- **Emotional lability/emotional dysregulation**
- Septal/basal forebrain damage can result in amnesia with confabulation

Frontal Lobe Syndromes



STRUCTURAL CORRELATES OF INTERPERSONAL VIOLENCE

- Anatomical likelihood estimation meta-analysis of studies measuring the quantitative association between regional grey matter volume and interpersonal violence.
 - Thirty-five studies were included in the label-based review, providing information for 1288 participants and 86 brain regions.
 - Findings: grey matter volume of discrete brain regions is not a reliable neuroimaging marker of violence.
 - This applied to regions implicated by current theories, including the orbitofrontal cortex (Davidson et al., 2000b), dorsal lateral prefrontal cortex (Davidson et al., 2000a), anterior cingulate cortex (Siever, 2008), amygdala (DeLisi et al., 2009) and hippocampus (Yang et al., 2008).

Risk of Violent Crime in Individuals with Epilepsy and TBI

- Fazel et al. (2011) compared 22,914 individuals with traumatic brain injury with 229,118 general population controls of whom 2,011 (8.8%) were violent after first diagnosis.
- Used Swedish population registers from 1973 to 2009, and examined associations of traumatic brain injury with subsequent violent crime (defined as convictions for homicide, assault, robbery, arson, any sexual offense, illegal threats, or intimidation).
 - Cases had a significantly higher risk of violent crime compared with general population controls after adjustment for age, gender, and socio-demographic confounders (aOR = 3.3, 3.1–3.5; Table 2) and further adjustment for substance abuse (aOR = 2.3, 2.2–2.5).
 - In the traumatic brain injury group, 992 (8.6%) individuals were convicted of violent offences out of 11,499 cases. This corresponded to an increased odds of violent conviction compared to unaffected siblings (aOR = 2.0, 1.8–2.3), where 832 out of a possible 19,628 (4.2%) individuals had violent convictions.
 - This equated to an absolute risk increase of 5.8% in the traumatic brain injury group compared with controls.

NEGATIVE FINDINGS

Other research does not support an association between brain injury and involvement in the criminal justice system.

- Among Iraq and Afghanistan War Era Veterans, a history of brain injury with increased irritability did not make a statistically significant contribution to a multivariate analysis using logistic regression of factors associated with criminal justice involvement (Elbogen et al., 2012).

COMMON LIMITATIONS IN TBI LITERATURE

- Need for studies of individuals with neurological disorders in the general population (as distinct from selected samples, such as prisoners).
- Lack of prospective studies.
- Evidence of publication bias in the head injury studies.
- Meta-analyses of observational studies can be prone to confounding and selection biases.
- Reviews conflate measures of violent behavior with indirect measures such as personality traits (e.g. poor impulse control, hostility) and psychiatric diagnoses.





**1. MALE
GENDER**

**2. SUBSTANCE
USE**

**3. HISTORY OF
PHYSICAL ABUSE**

**4.
HOMELESSNESS**

SHARED RISK FACTORS

The background features a white grid of vertical lines on a light grey surface. A hand in a white glove holds a black pencil, positioned as if writing. Small orange figures representing prisoners are visible behind the grid lines. A large dark grey circle is overlaid on the right side of the image, containing text.

DURING INCARCERATION

Prisoners who have had head injuries may experience mental health problems such as severe depression and anxiety, substance use disorders, difficulty controlling anger, or suicidal thoughts and/or attempts.

TBI-RELATED PROBLEMS AFFECT PRISONERS DURING INCARCERATION

- **Attention** deficits may make it difficult for the prisoner with TBI to focus on a required task or respond to directions given by a correctional officer.
 - This can be misinterpreted as deliberate defiance on the part of the prisoner.
- **Memory** deficits can make it difficult to understand or remember rules or directions, which can lead to disciplinary actions by jail or prison staff.
- **Irritability** or anger might be difficult to control and can lead to an incident with another prisoner or correctional officer and to further injury for the person and others.
- **Slowed verbal and physical responses** may be interpreted by correctional officers as uncooperative behavior.
- **Uninhibited or impulsive behavior**, including problems controlling anger and unacceptable sexual behavior, may provoke other prisoners or result in disciplinary action by jail or prison staff.

ADDRESSING THE ISSUE: RECOMMENDATIONS FROM THE CDC

- A recent report from the Commission on Safety and Abuse in America's Prisons recommends increased health screenings, evaluations, and treatment for inmates.
- In addition, TBI experts and some prison officials have suggested:
 - Routine screening of jail and prison inmates to identify a history of TBI.
 - Screening inmates with TBI for possible alcohol and/or substance abuse and appropriate treatment for these co-occurring conditions.
 - Additional evaluations to identify specific TBI-related problems and determine how they should be managed. Special attention should be given to impulsive behavior, including violence, sexual behavior, and suicide risk.



TBI AND REINTEGRATION

- Lack of treatment and rehabilitation for persons with mental health and substance abuse problems while incarcerated increases the probability that they will engage in problematic substance use when released.
 - Persistent substance problems can lead to homelessness, return to illegal drug activities, re-arrest, and increased risk of death after release.
- Criminal justice professionals and TBI experts have suggested the following:
 - Community re-entry staff should be trained to identify a history of TBI and have access to appropriate consultation with other professionals with expertise in TBI.
 - Transition services for released persons returning to communities should accommodate the problems resulting from a TBI.
 - Released persons with mental health and/or substance abuse problems should receive case management services and assistance with placement into community treatment programs.
 - CDC supports new research to develop better methods for identifying inmates with a history of TBI.



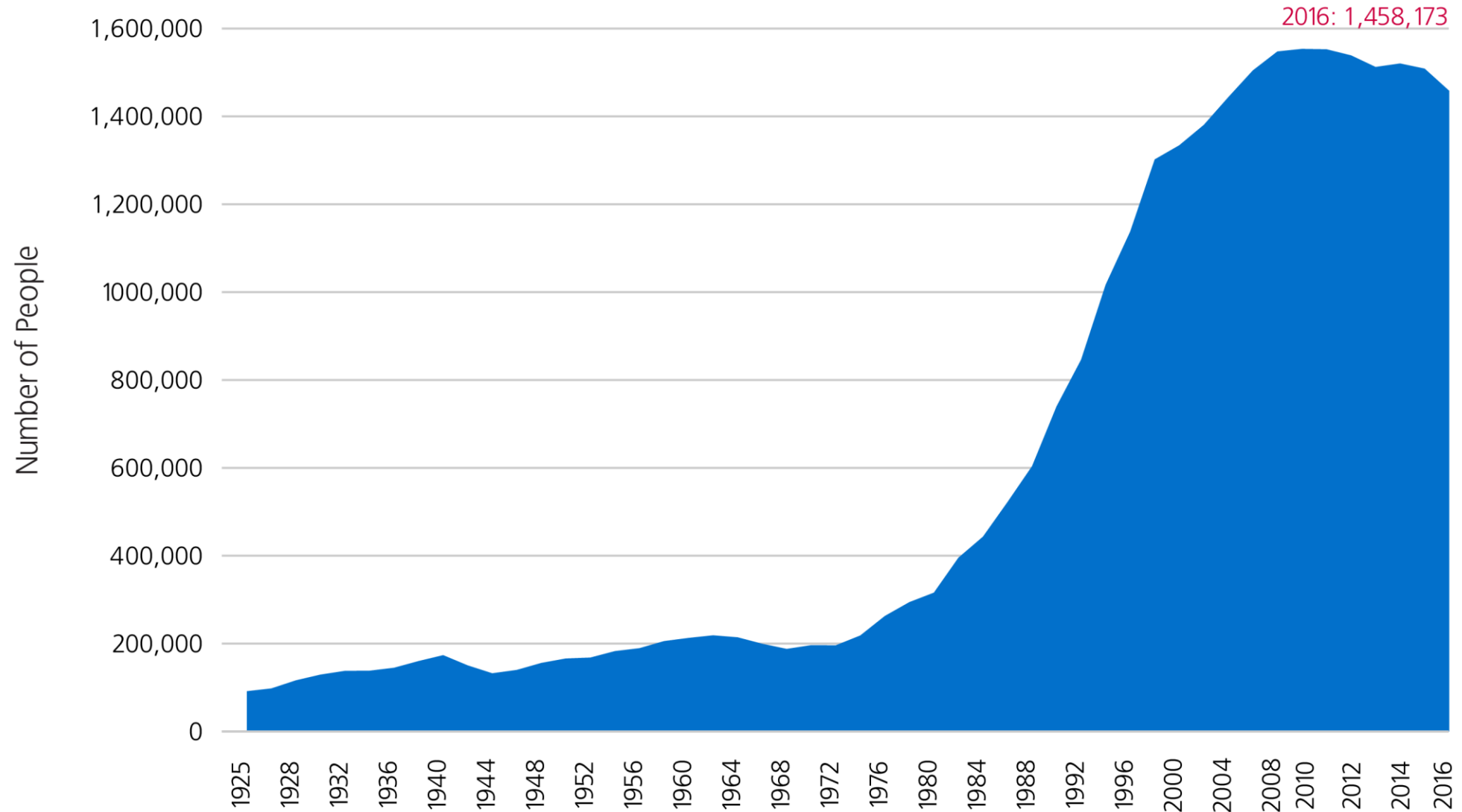
ADVOCACY

APA Multicultural Guidelines: An Ecological Approach to Context, Identity, and Intersectionality (2017)

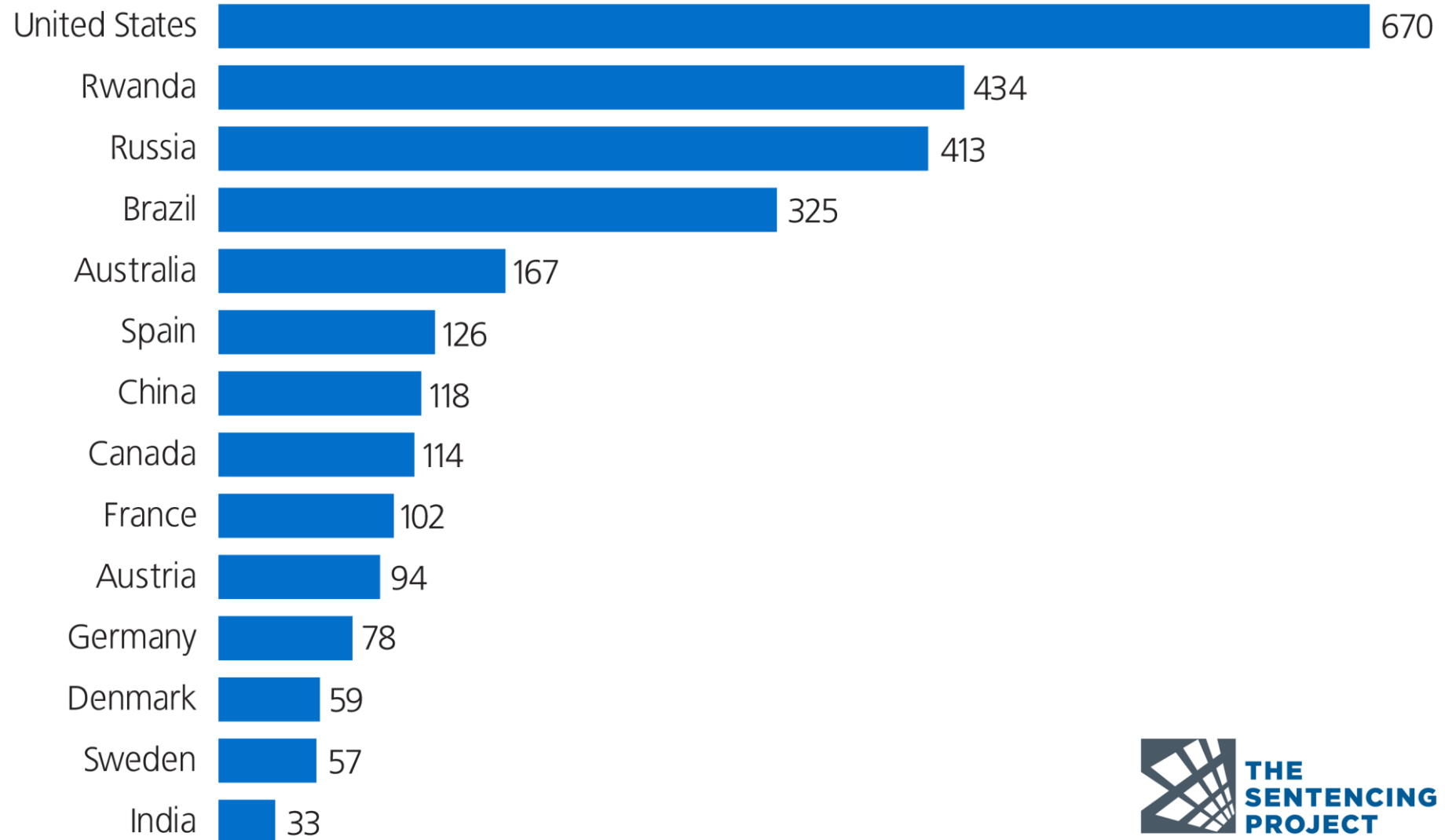
“Guideline 5. Psychologists aspire to recognize and understand historical and contemporary experiences with power, privilege, and oppression. As such, they seek to address institutional barriers and related inequities, disproportionalities, and disparities of law enforcement, administration of criminal justice, educational, mental health, and other systems as they seek to promote justice, human rights, and access to quality and equitable mental and behavioral health services.”



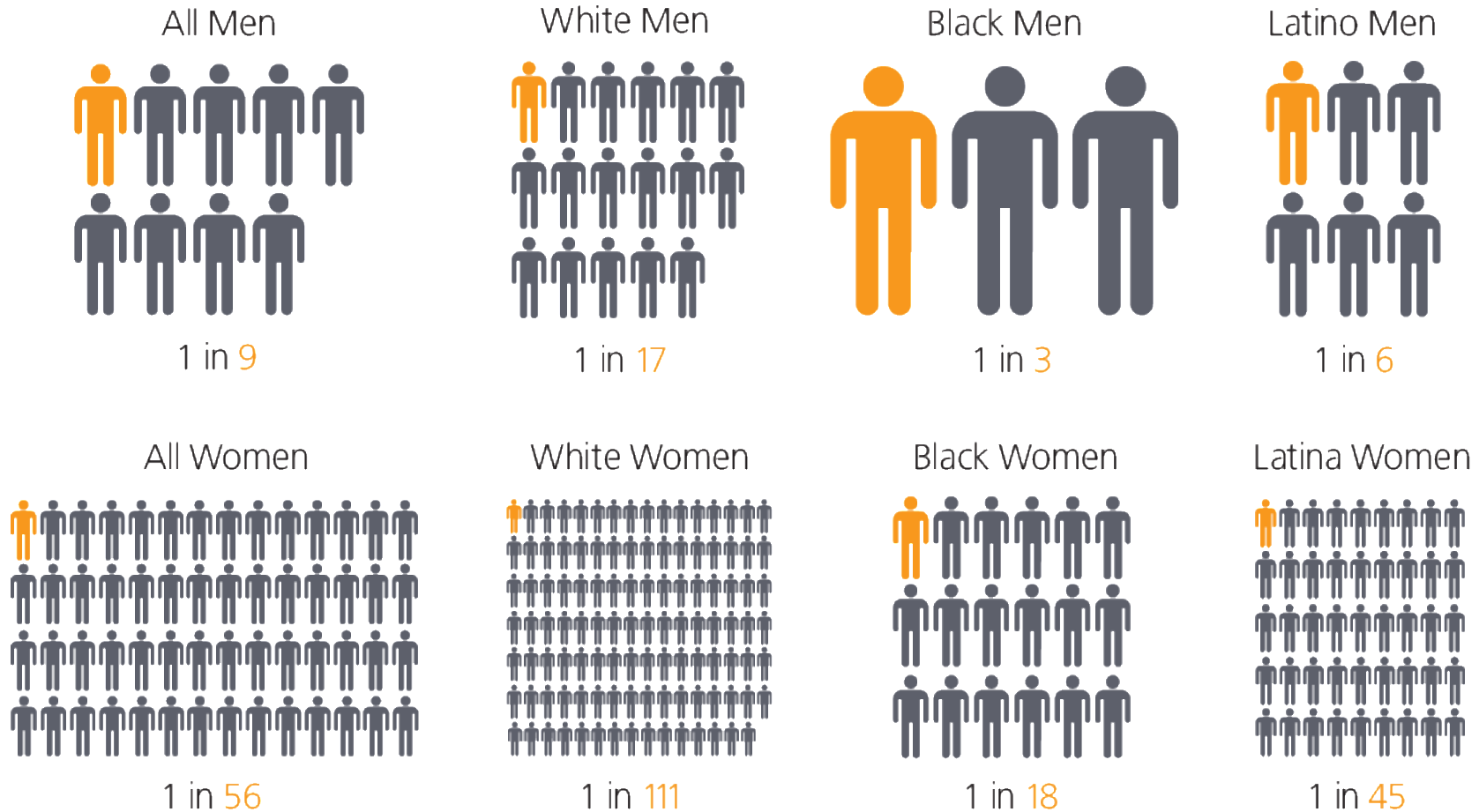
U.S. State and Federal Prison Population, 1925-2016



International Rates of Incarceration per 100,000



Lifetime Likelihood of Imprisonment of U.S. Residents Born in 2001



Source: Bonczar, T. (2003). *Prevalence of Imprisonment in the U.S. Population, 1974-2001*. Washington, DC: Bureau of Justice Statistics.

CLINICAL & ADVOCACY RESOURCES

Traumatic Brain Injury (TBI):

- CDC, National Center for Injury Prevention and Control, www.cdc.gov/ncipc/tbi/TBI.htm

Legal Issues of Persons with TBI within Correctional Settings:

- National Disability Rights Network
www.ndrn.org/aboutus/consumer.htm

Substance Abuse:

- Substance Abuse & Mental Health Services Administration, www.samhsa.gov

Intimate Partner Violence (IPV):

- CDC, National Center for Injury Prevention and Control, www.cdc.gov/ncipc/factsheets/ipvfacts.htm

Policy

- The Sentencing Project, www.sentencingproject.org
- ACLU of Colorado, [*Blueprint for Smart Justice*](#)

CASE EXAMPLE: IDENTITY THAT EXTENDS BEYOND ONE'S DISABILITY

- “Anthony,” a 25-year-old, cisgender, biracial/multi-ethnic (Black/African American/Black American, White/White American, Latino/Hispanic/Latinx) male, was referred for individual psychotherapy in conjunction with ongoing vocational rehabilitation programming.
 - He presented with a history of mild intellectual disability acquired secondary to a traumatic brain injury (TBI) sustained at age 15 when he was in a motor vehicle accident with his family. He lost both of his parents and two of his siblings in the accident, and he and his younger brother both sustained significant TBIs.
 - Anthony was highly functioning prior to his TBI. He had been enrolled in a college prep high school program and was active in athletics and extracurricular activities.
 - Two older brothers now serve as guardians for Anthony and his brother.



CASE EXAMPLE: CONTINUED

- Anthony's case manager indicated that Anthony was struggling with impulse control, particularly around select peers, both male and female. This led to difficulties at his residence, a group home program for young men who have neurodevelopmental disorders, and in the sheltered employment program Anthony participates in weekly.
 - The case manager indicated that she suspected some of his impulsivity, which has included inappropriate language and touching, was related to Anthony's desire to be more like his peers who are in relationships.
 - She shared that she and the staff working with Anthony were seeking guidance on how to best support him in making better behavioral choices, particularly around his romantic and sexual feelings.



EARLY COURSE OF TREATMENT

- At first, therapeutic work with Anthony focused on helping him share his current experience of himself as a man with an acquired neurologic injury as well as to gain an understanding of how his viewpoint about himself had changed.
 - This work was done in a context of Anthony's awareness of who he had been prior to the accident and what was different for him as a consequence of his injuries and the loss of some capabilities.
 - Anthony's tendency to act and speak impulsively were primary consequences of his TBI. He sustained injuries to his developing executive skills, such that challenges were noted with flexibility, thinking strategically, and impulsivity, including saying inappropriate things as they came to mind.
 - It became evident that Anthony's recent behavioral difficulties, where he impulsively sought out more intimate interactions with peers, were associated with efforts to be "more of who I used to be, someone who went on dates and had friends, who had people in my life who wanted to be around me."



COURSE OF TREATMENT, CONT.

- Anthony shared that he often felt dismayed that he was now seen as “ugly” and “stupid” by others.
 - Anthony compared what was different for him then with now; he focused specifically on the scar he had because of his neurosurgeries for his TBI; his loss of motor skills, such as his inability to ambulate independently; and his altered growth, that made him much shorter than peers.
- Anthony began to talk more directly about what he had lost cognitively and emotionally because of the accident. His path had changed significantly following his injury due to the loss of opportunities and expected outcomes.
 - Anthony shared that he was often reminded of these losses when he saw perceived neurotypical peers outside of his program and residence.
 - Anthony experienced significant and understandable sadness about these losses. He was able to identify that this led him to want to “change stuff” by making his life “normal.” However, Anthony also acknowledged that some things could not easily be changed.



COURSE OF TREATMENT, CONT.

- As treatment continued, discussions focused on Anthony's experience of these losses and their impact on his ability to see the possibility of a life that was more layered and optimistic.
 - With regard to his impulsive actions, the therapist helped Anthony better understand his range of feelings regarding intimacy and sexuality.
 - It was important for the therapist to help Anthony and his support team address how he, a young man with many typical wishes and desires both in terms of love and physical interest, could address these within home and work environments.



COURSE OF TREATMENT, CONT.

- One important step forward occurred when Anthony was able to meet a wider range of peers, both for friendship and potential dating, and to work directly on how to discriminate between an interest in intimacy and sexual desires.
- Social scripts were developed, with coaching provided within treatment and with the teams at work and in the residence.
- This allowed Anthony to more effectively inhibit immediate wishes to connect through touching, that were often perceived as intrusive and inappropriate.
 - Instead Anthony could work toward initiating interactions verbally.



OUTCOMES OF PSYCHOTHERAPY

- Anthony worked to recognize himself as not only someone with a disability, but also as a member of a wider array of communities, where his strengths and differences could be appreciated.
 - His beliefs of himself as “damaged” and “ugly” were challenged through opportunities to ask both how others perceived him.
- Anthony was supported in more directly mourning the trauma and losses he experienced, so that he could begin to conceptualize himself as resilient.
- This led to two important changes: One, Anthony began to see himself as moving forward on a new trajectory, which, while different from his path prior to the accident, was still valid and open to many successes. Two, Anthony came to recognize that he himself could play a more active role in decision making. These changes led Anthony to seek out new opportunities within his vocational program and to open himself up to the interest a peer expressed with regard to dating him.



CONSIDER...

How might Anthony's behaviors be interpreted or conceptualized by various members of the criminal justice system, including police and the judicial system? His peers who were recipients of his unwanted behaviors? The family members of those peers?



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