Race, criminalization and urban mental health in the United States

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Purpose of review
As efforts to increase policing and roll back criminal legal system reforms in major U.S. cities rise, the collateral consequences of increased criminalization remain critical to document. Although the criminalization of mental illness has been well studied in the U.S., the mental health effects of criminalization are comparatively under-researched. In addition, despite extreme racial disparities in U.S. policing, there is limited understanding of how criminalization may contribute to racial disparities in mental health.

Recent findings
Literature included in this review covers various types of criminalization, including direct and indirect impacts of incarceration, criminalization of immigration, first-hand and witnessed encounters with police, and the effects of widely publicized police brutality incidents. All forms of criminalization were shown to negatively impact mental health (depression, anxiety and suicidality), with evidence suggestive of disproportionate impact on Black people.

Summary
There is evidence of significant negative impact of criminalization on mental health; however, more robust research is needed to address the limitations of the current literature. These limitations include few analyses stratified by race, a lack of focus on nonincarceration forms of criminalization, few longitudinal studies limiting causal inference, highly selected samples limiting generalizability and few studies with validated mental health measures.

Keywords
criminal legal system, mental health, policing, racial equity

INTRODUCTION

Relationships between mental illness and exposure to the criminal legal system in the United States are well documented [1–3]. The majority of research focuses on mental illness as a cause of criminalization [1,2,4,5], with far less attention to whether criminalization causes poor mental health. There are multiple mechanisms through which exposure to the criminal legal system may result in negative mental health outcomes, either directly or indirectly [6▪▪]. Direct mechanisms include exposure to policing, incarceration and community supervision (i.e. probation or parole), which can be highly stigmatizing, traumatizing and potentially lethal [7▪▪,8]. Indirectly, exposure to the criminal legal system has substantial ramifications for myriad social factors, such as employment, housing and family and community connectedness, which influence mental health and well being for both the person directly exposed and their family members [9–11]. Given exhaustively documented structural racism within the United States criminal legal system [7▪▪,12–14], these mechanisms disproportionately impact Black communities and may contribute to existing racial patterning in psychopathology and symptomatology [15,16].

There is growing evidence of the impact of criminalization on mental health [17–20]. Nonetheless, in response to largely sensationalized perceptions of rising crime in 2022 [21,22], political

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KEY POINTS

- There is evidence of a significant negative impact of criminalization on mental health, with suggested differential effects by race.

- This literature can be advanced greatly by further attention to measures of criminalization other than incarceration.

- Methodological limitations of current literature such as study design, participant selection and outcome classification must be addressed in future studies.

efforts in many urban centres across the United States are pushing to further increase police budgets, surveillance and visible police presence in public spaces and select communities, and roll back criminal legal system reforms [23–27]. It is therefore vital that discussions about whether to increase the reach of criminalization and exposure to the criminal legal system include an up-to-date, evidence-based assessment of the potential collateral consequences of these policy choices for mental health in the communities that would be most impacted. In this review, we provide an assessment of the state of the recent evidence, published since 2020, regarding the relationship between criminalization and mental health, and its potential for racialized mental health effects. In the sections below, we briefly summarize this evidence across various operationalizations of criminalization, with a specific focus on the potential for racialized impacts.

INCARCERATION

Since 2020, incarceration has been one of the more frequently studied aspects of criminalization in regards to mental health, both in terms of the impact of first-hand experiences of incarceration [28–30,31■,32■,33–35,36,37■■,38–48], and the impact of having a family member incarcerated [49,50■,51,52] (Table 1).

First-hand experiences

Since 2020, multiple studies have published evidence of an association between poor mental health and incarceration. In a study of causes of mortality among a cohort of previously incarcerated youth in Ohio ($n = 3645$), investigators found rates of suicide 4.3 [95% confidence interval (95% CI) 2.2–8.3] times greater than a control group of Medicaid-enrolled youth without a history of incarceration [31■]. Associations differed by race; among those formerly incarcerated, risk of suicide was lower for

Black, relative to white youth (IRR = 0.18; 95% CI 0.04–0.89 [31■]. In addition, duration of incarceration has been shown to influence the mental health consequences of incarceration, though the impact of duration differs by sex and race. In a cross-sectional study of 12 110 currently incarcerated people, greater length of incarceration was associated with increased mental health symptoms (i.e. DSM-IV symptoms for mood, anxiety, psychotic or personality disorders) for Black men and women, but fewer symptoms for white men, and no association for white women [32■].

Although broadly considered to be a less harmful exposure than incarceration, evidence also points to associations between community carceral supervision (i.e. probation or parole) and worse mental health. In Hennepin County, Minnesota, people on probation ($n = 5873$) had a greater prevalence of psychiatric disorders (as determined by ICD-10 codes) compared with the general population [30]. Disorder prevalence was also racially patterned among those on probation: Black people on probation had a lower overall prevalence of psychiatric disorders relative to white people on probation (48.5 vs. 64.9%), but they experienced a greater prevalence of severe mental illness (defined as schizophrenia or other psychotic disorders) (13.6 vs. 11.2%) [30].

Therefore, all three studies reported evidence of an association between carceral exposure and poor mental health, and all report heterogeneity by race and/or sex (though the directionality of effects varies by outcomes). However, though all three studies assessed mental health outcomes following criminal legal system exposure, none of them included baseline mental health data, which limits causal inference.

Family member incarcerated

Incarceration not only affects incarcerated people but also their families. Since 2020, multiple studies across heterogeneous study populations and operationalizations of mental health have reported evidence that family member incarceration adversely impacts mental health outcomes. In a nationally representative sample of adults ($n = 2815$), people with a history of an incarcerated family member reported lower levels of mental well being [50■]. However, many studies of this association are replete with methodological concerns such as selection bias or poor confounder control, which limit confidence in the findings. For example, a study of 190 public housing residents in a mid-Atlantic city reported that people with a currently incarcerated mother had 15 times the odds of making a plan to

Table 1. Overview of study details and relevant findings from reviewed studies of first-hand ($n = 20$) and family member ($n = 4$) incarceration and mental health, published 2020−2022

Category	Study	Study design	Population	Number of participants	Operationalization of exposure	Outcome of interest	Operationalization of outcome	Relevant findings
First-hand incarceration[a]	Boen et al. [1]	Cohort	Nationally representative, longitudinal study of adolescents and adults	5488	Self-reported duration and number of times incarcerated; of ever stopped by police; ever arrested; ever convicted	Depressive symptoms	CES-D	Arrests levels were significant mediators of the relationship between race and depressive symptoms; duration of incarceration associated with increased depressive symptoms
First-hand incarceration[a]	Bowleg et al. [2]	Mixed methods cross-sectional	Black men aged 18–44 years living in DC	891	Ever incarcerated; 12-item scale on frequency of police encounters; 6-item scale on frequency of police avoidance	Depressive symptoms	CES-D	Negative police encounters, and police avoidance are associated with increased depressive symptoms; some evidence that they may serve as mediators of the association between incarceration and depressive symptoms
First-hand incarceration	Bryson et al. [3]	Cross-sectional	Men in National Survey on Drug Use and Health	220 261	Being arrested and booked in the past 12 months (excluding minor traffic violations)	Suicide attempts	1+ self-reported nonfatal suicide attempts in the past year	When disaggregated by race, arrest accounted for a significant proportion of suicide attempts among white men, but not men of other races.
First-hand incarceration	Del Rio Gonzalez et al. [4]	Cross-sectional	Black/African American men ages 18–45 years in Philadelphia, PA, in predominantly Black blocks	578	Number of times incarcerated	Depressive symptoms	PHQ-9	There were significant main effects of racial discrimination and incarceration. The relationship between incarceration and depressive symptoms was modified by problem-solving coping
First-hand incarceration	Gluck et al. [5]	Cross-sectional	Low-income Black women recruited in public hospital waiting rooms in Atlanta	7247	Self-reported history of legal problems (ever arrested, ever been to jail, ever been to prison, violence charge, weapons charge)	Probable MDD and PTSD diagnoses	Clinical exam	All legal charges were associated with both MDD and PTSD, in bivariate analyses, but neither were subject of main analyses
First-hand incarceration	Harawa et al. [6**]	Cohort	Black and/or Latino MSM in Los Angeles	440	CES-D	History of Incarceration	Self-reported history of incarceration	Depressive symptoms predicted history of incarceration.
First-hand incarceration	Hawks et al. [7**]	Cross-sectional	National Survey on Drug Use and Health participants, aged 18—49 years	136 524	Self-report being on probation in the past 12 months	Any or serious mental illness	National Survey on Drug Use and Health algorithm	White people on parole were more likely to have any or serious mental illness compared to POC on parole

Table 1 (*Continued*)

Category	Study	Study design	Population	Number of participants	Operationalization of exposure	Outcome of interest	Operationalization of outcome	Relevant findings
First-hand incarceration[a]	Hoff *et al.* [8]	Cohort	Black sexual minority men in six urban U.S. cities	1169	Incarceration since baseline, and experiences of police harassment due to race or sexuality since baseline (6 months)	Depressive symptoms	CES-D	Recent incarceration was a strong predictor of depressive symptoms, mistrust of providers, perception that providers did not speak in a way that could be understood, increased reliance on the emergency department for healthcare, and increased disruptions in care.
First-hand incarceration	Kajeepeta *et al.* [9]	Panel Cross-sectional	USA counties	1094 counties	County jail incarceration rate	County suicide rates	Publicly available data	There were higher suicide rates in counties with higher incarceration rates
First-hand incarceration	Kennedy *et al.* [10]	Qualitative	Women in state prisons in the southeastern US	187	–	–	–	Themes highlight maternal sacrifices of health and wellness, including substance use treatment, the psychological distress of family separation and requests for additional parenting programs to increase mother-child connection.
First-hand incarceration	Latham-Mintus *et al.* [11]	Cross-sectional	Adults over the age of 50	11 883	Incarceration	Depressive symptoms	Self-reported symptoms	Incarceration was associated with more depressive symptoms among older men and women, early-life conditions, and lifetime stressful events. Formerly incarcerated women, particularly women of colour, had more depressive symptoms relative to other groups.
First-hand incarceration	Lawson *et al.* [12]	Cross-sectional	Adults with prior or current felony-level charge, engaged in community-based behavioural health treatment	2827 Black and 14 022 White adults	Population had a prior or current felony-level charge, range of investigated risk factors	Suicide risk	Evaluated by a clinician	Risk factors for suicide risk are similar to general population - history of self-harm, substance use, behavioural health needs and so on and magnitudes were mostly similar among Black and white participants. Black participants had lower overall suicide risk.
First-hand incarceration	Morgan *et al.* [13]	Cohort	Washington State Population	5 416 773 total (140 281 previously incarcerated)	Incarceration in a Washington State prison	Suicide	Death certificate data	Risk of suicide was higher among previously incarcerated individuals compared with the general population

Table 1 (*Continued*)

Category	Study	Study design	Population	Number of participants	Operationalization of exposure	Outcome of interest	Operationalization of outcome	Relevant findings
First-hand incarceration	Olson *et al.* [14]	Cross-sectional	Adults on probation in Hennepin County	5873	On probation	Depression and Severe MI	Healthcare claims and administrative probation data	Compared with the general population, individuals on probation had higher rates of mental illness
First-hand incarceration	Porter *et al.* [15]	Cross-sectional	Prisoners in the US	12 118	Time served	Mental health symptoms over the past year	Self-reported presence of symptoms (Depression, bipolar disorder, anger, psychotic disorders, anxiety disorders and personality disorders)	Time served were correlated with mental health symptoms, differing across race and sex. White men exhibit fewer mental health symptoms at longer exposures to prison, while Black men and Black women exhibit more symptoms
First-hand incarceration	Puing *et al.* [16]	Cohort	Recently incarcerated adults with HIV	1450	HIV-positive and recently incarcerated	Mental health emergency department visits	Incarceration records and medical records	Recently incarcerated adults had higher proportion of emergency department encounters for mental health and substance use disorders than the general population
First-hand incarceration	Reyes *et al.* [17]	Cross-sectional	Adults diagnosed with HIV	11 739	Incarceration in the past 12 months	Depression, Anxiety	PHQ-8	Adults with HIV who were recently incarcerated, when compared with those who were not, were more likely to have experienced severe anxiety
First-hand incarceration	Ruch *et al.* [18]	Cohort	Youths aged 11–21 years	3645 previously incarcerated and 1 171 260 Medicaid-enrolled youths	Self-reported history of juvenile incarceration	Cause of death (suicide)	Death certificate information	Compared with Medicaid-enrolled youths, mortality rates for previously incarcerated youths were highest for homicide, overdose, and suicide. Formerly incarcerated Black youths had a lower risk of suicide than White youths who were incarcerated.
First-hand incarceration	White *et al.* [19]	Cross-sectional	African American and Latino MSM	1482	Incarceration (past, and within past 3 months)	Psychological distress	Kessler Psychological Distress Scale (K10)	Recently incarcerated participants were more likely to have mild or severe psychological distress
First-hand incarceration	Williams *et al.* [20]	Qualitative	Black men with a history of incarceration	20	–	–	–	Participants expressed mental health effects of incarceration and reintegration including compounding effects of Black masculinity, mental stress of reliving mistakes, exacerbated forms of discrimination, and lack of resources.

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Table 1 (*Continued*)

Category	Study	Study design	Population	Number of participants	Operationalization of exposure	Outcome of interest	Operationalization of outcome	Relevant findings
Family member incarcerated	Babad *et al.* [21]	Cross-sectional	Undergrads aged 18–25 years	436	Family member incarcerated	Self-esteem, Loneliness, Negotiation	Child Abuse Potential (CAP) Inventory subscales, Conflict Tactics Scale–2nd Edition	Having a family member in prison predicted higher levels of negotiation in intimate partner relationships (opposite of hypothesis) and no association with self-esteem or loneliness.
Family member incarcerated[a]	Giano *et al.* [22]	Cross-sectional	Seventh-grade students enrolled in an urban school district in a state in the south-central United State	611	Immigration-related arrest of a family member and parental citizenship status	Depressive symptoms	CES-D	Experiencing or witnessing an immigration-related arrest of a family member was significantly associated with higher rates of depressive symptoms. Parental citizenship status had a moderating effect
Family member incarcerated	Quinn *et al.* [23]	Cross-sectional	African–American youth and young adults in public housing	190	Parental incarceration	Suicidal Ideation	Reporting having made a plan to die by suicide in the last 12 months	Findings indicate males were significantly more likely than females to have devised a plan to die by suicide, especially if their mothers were incarcerated
Family member incarcerated	Sundaresh *et al.* [24]	Cross-sectional	Nationally represented adults	2815	Family member incarceration (separated by immediate family and extended family)	Thriving	Based on cutoffs in multiple domains (Overall, physical health, mental health, social wellbeing, spiritual wellbeing)	Family member incarceration was associated with lower well being overall including mental health.

CES-D, Center for Epidemiologic Studies Depression Scale; GAD, General Anxiety Disorder; PHQ, Patient Health Questionnaire.
[a]Study included in multiple categories.

commit suicide in the past 12 months, relative to those without a currently incarcerated mother [52]. Although these estimates are striking, the models that generated them were not appropriately specified. For example, maternal incarceration was estimated as one of several covariates in the regression model, not as an exposure of interest. This conceptual distinction is important because it means that the regression model was not built explicitly to account for confounders of the maternal incarceration to suicidality relationship (e.g. the analyses do not control for maternal past mental illness). Interpreting regression coefficients in this manner is often referred to as the 'table 2 fallacy' [53], and raises concerns about the validity of the estimates. Although maternal incarceration may have a true impact on youth suicidality, updated estimates are needed.

CRIMINALIZATION OF IMMIGRATION

As antiimmigrant sentiment increasingly becomes a salient feature of partisan U.S. political discourse [54], some states have begun enacting state-level immigration-related laws intended to supplement federal immigration enforcement and further criminalize immigrants. One example of these laws is Arizona's SB1070, which was enacted in 2010. SB1070 empowers local law enforcement to detain any person who is suspected of having 'unlawful' immigration status. A growing body of quantitative literature has begun investigating the impact of such laws on mental health [49,55–57,58[■]], though a lack of robust measures of mental health are a common limitation of this literature. Using data from the biennial Youth Risk Behavioral Surveillance System, investigators found evidence of increased reported past-day sadness for Hispanic students in Arizona ($n = 3402$) following the enactment of SB1070, relative to Hispanic students in other states ($n = 64\,225$) [58[■]].

Qualitative research further supports the hypothesis that criminalization of immigration has adverse mental health consequences (Table 2) [59,60]. In a series of in-depth qualitative interviews with undocumented Latinx immigrants in Michigan, Valentín-Cortes *et al.* [59] found that restrictive immigration policies, fear of deportation, as well as discrimination, media rhetoric and antiimmigrant sentiment were all linked with adverse mental and physical health outcomes.

POLICE ENCOUNTERS

To account for the potential impact of police interactions on mental health, studies must look beyond documented arrests to include stops, searches, abusive language and use of physical force. These types of police interactions are experienced unevenly across communities in ways that may not only impact the person directly experiencing the encounter, but also members of the broader community.

First-hand encounters

Since 2020, several studies have documented associations between personal encounters with the police and negative mental health outcomes in multiple populations (Table 3) [29,33,38,61–64, 65[■■],66–70,71[■],72,73[■■]]. Remch *et al.* [65[■■]] found that in a longitudinal cohort of Black MSM ($n = 1155$), those who experienced police harassment in the past 6 months had a 1.63 (95% CI 1.32–2.02) times higher rate of psychological distress, but not a higher rate of depressive symptoms. Although such longitudinal studies are exceedingly rare, others have advanced the field through comprehensive assessment of the construct of police encounters. A 2021 study by Thompson *et al.* [68] using a cross-sectional, representative sample of New York City adults ($n = 2334$), investigated the associations between mental and behavioural health outcomes and being stopped, searched or questioned; threatened or abused, or racially discriminated against by police. The investigators' findings, while varying in magnitude, suggested that police encounters were associated with poor mental health, with the strongest associations found among Black residents and those aged 25–44 years. Although the study featured a wide assessment of potential police interaction exposures, the study lacked clinically robust measures of mental health, operationalizing the outcome as the number of 'poor mental health days' experienced per month.

Witnessed encounters

Other studies investigated the impact of vicarious police encounters, that is witnessing other people's encounters with police (Table 3) [66,71[■],72,73[■■], 74[■]]. These studies all focused on adolescents, and all found associations between witnessing police encounters and poor mental health. Using data on 1488 adolescents in the Fragile Families and Child Wellbeing Study, Jackson *et al.* [74[■]] found that witnessing more intrusive encounters, including use of physical force and arrests, was associated with elevated emotional distress and diminished mental wellbeing, relative to those witnessing less intrusive encounters. The detailed categorization of exposure was an important contribution of this study; however, outcome reports were short self-reported scales, with limited granularity. In another study, Perryman *et al.* [71[■]] used latent class analysis

Table 2. Overview of study details and relevant findings from reviewed studies of criminalization of immigration and mental health, published 2020–2022 ($n = 4$)

Category	Study	Study design	Population	Number of participants	Operationalization of exposure	Outcome of interest	Operationalization of outcome	Relevant findings
Criminalization of immigration[a]	Giano et al. [1]	Cross-sectional	Seventh-grade students enrolled in an urban school district in a state in the south-central United State	611	Immigration-related arrest of a family member and parental citizenship status	Depressive symptoms	CES-D	Experiencing or witnessing an immigration-related arrest of a family member was significantly associated with higher rates of depressive symptoms. Parental citizenship status had a moderating effect
Criminalization of immigration	Luo et al. [2]	Panel Cross-sectional	Public school high school students	3402 from Arizona, 64225 from comparison states	Enactment of SB 1070	Feeling sad, considering suicide, suicide attempt	Self-reported single questions	SB 1070 increases the probability of feeling sad, but not suicide attempts or completed suicide
Criminalization of immigration	Monico et al. [3]	Qualitative	Hispanic immigrant college students	13	–	–	–	Participants reported a heightened fear for the anticipated ending of DACA benefits. The expectation that their current DACAmented status will be revoked produces frustration about their present lived experience and a source of anxiety and stress for their future.
Criminalization of immigration	Valentin-Cortes et al. [4]	Qualitative	Undocumented Latinx immigrants living in Michigan	28	–	–	–	Stressors including restrictive immigration policies, antiimmigrant rhetoric in the media and by political leaders, fear of deportation, discriminatory events, concealment, and internalized antiimmigrant sentiment have resulted in distrust in community resources, uncertainty about future health benefits, delayed medical care, and adverse mental health outcomes

CES-D, Center for Epidemiologic Studies Depression Scale; GAD, General Anxiety Disorder; PHQ, Patient Health Questionnaire.
[a]Study included in multiple categories.

Table 3. Overview of study details and relevant findings from reviewed studies of first-hand ($n=16$) and witnessed ($n=4$) police encounters and mental health, published 2020–2022

Category	Study	Study design	Population	Number of participants	Operationalization of exposure	Outcome of interest	Operationalization of outcome	Relevant findings
First-hand police encounters[a]	Boen et al. [1]	Cohort	Nationally representative, longitudinal study of adolescents and adults	5488	Duration and number of times incarcerated; ever stopped by police; ever arrested; ever convicted	Depressive symptoms	CES-D	Arrests levels were significant mediators of the relationship between race and depressive symptoms; duration of incarceration associated with increased depressive symptoms
First-hand police encounters[a]	Bowleg et al. [2]	Mixed methods cross-sectional	Black men aged 18–44 years living in DC	891	Ever incarcerated; 12-item scale on frequency of police encounters; 6-item scale on frequency of police avoidance	Depressive Symptoms	CES-D	incarceration, negative police encounters, and police avoidance all associated with increased depressive symptoms; some evidence that the latter two may serve as mediators.
First-hand police encounters	Chin et al. [3]	Cross-sectional	Adults in South Los Angeles	500	Police mistreatment (Brief Perceived Ethnic Discrimination Questionnaire–Community Version, BPEDQ-CV)	PTS and depression symptoms	17-item Posttraumatic Diagnostic Scale, CES-D	Police mistreatment was not associated with PTS or depression symptoms in adjusted regression Strongest associations for PTS for men were social rejection with stereotyping and direct threat/ attack for women. The strongest association for depression was for social rejection, among both men and women
First-hand police encounters[a]	Hoff et al. [4]	Cohort	Black sexual minority men in six urban U.S. cities	1169	Incarceration since baseline, and experiences of police harassment due to race or sexuality since baseline (6 months)	Depressive symptoms	CES-D	Recent incarceration was a strong predictor of depressive symptoms, mistrust of providers, perception that providers did not speak in a way that could be understood, increased reliance on the emergency department for healthcare and increased disruptions in care.
First-hand police encounters	Jackson et al. [5]	Cross-sectional	African American and Caribbean adolescents ages 13–17 from the Survey of American Life, Adolescent Supplement	1170	Ever abused by the police	Public regard, Depressive symptoms, Perceived stress	CES-D	Black American boys who reported being abused by the police felt that society did not view them favourably in comparison to those who did not report being abused by the police. No significant association between reports of being abused by the police with depressive symptoms or perceived stress
First-hand police encounters[a]	Jackson et al. [6■■]	Cross-sectional	Adolescents from one wave of the Fragile Families Study	3444	Reports of being personally stopped by police and/ or witnessing police stops	Feeling scared, angry, or safe	Single questions: At the time of this incident, did you feel: 1. Scared?, 2. Angry?, 3. Safe?	Black youth compared to white had higher odds of feeling angry and feeling unsafe. Hispanic and multiracial youth also had higher odds. No difference for felt scared

Table 3 (*Continued*)

Category	Study	Study design	Population	Number of participants	Operationalization of exposure	Outcome of interest	Operationalization of outcome	Relevant findings
First-hand police encounters	Jahn *et al.* [7■■]	Cross-sectional	Adolescents aged 12–18 years from Panel Study of Income Dynamics	2557	Frequency of police stops in the past 6 months	Depression, well being	Children's Depression Inventory (CDI), Subjective well being scale (REF TO ADD: Keyes CLM. The Subjective Well Being of America's Youth: Toward a Comprehensive Assessment. Adolesc Fam Heal 2006;4 : 3–11.)	Black and White girls who were stopped at least two times in the last 6 months had higher average depression scores relative to girls who were not stopped and these associations were stronger among girls whose parents had been incarcerated. Although our study found that White boys with more police stops had worse depressive symptoms on average, this association did not hold for Black boys.
First-hand police encounters	Khan *et al.* [8]	Cohort	Sexual minority men	665	How many times been stopped/frisked in the past year	Depressive symptoms	Beck Depression inventory	Depressive symptoms were associated with stop and frisk, but they did not stratify this finding by race.
First-hand police encounters	Lacombe-Duncan *et al.* [9]	Qualitative	Trans women living with HIV in Canada	11	–	–	–	Participants described not only having their concerns disregarded by police, but they also experienced physical and verbal violence from police in the context of sex work. They discuss impact of trauma on mental health.
First-hand police encounters[a]	Perryman *et al.* [10]	Cross-sectional	Black adolescent high school students	1601	Lifetime stopped by police at school, seen others stopped by police at school, Disciplined at school	Depressive symptoms	CES-D	Each subgroup had an incremental increase in mean depressive symptom scores. Compared to the unscathed (control) subgroup, each subgroup also had lower school attachment.
First-hand police encounters	Remch *et al.* [11]	Cohort	Black MSM	1155	Reported past 6-month experience with police harassment motivated by racism and sexuality	Psychological distress, Depressive symptoms	Racism and Life Experience Scales-Daily Life Experiences (RaLES-DLE) scale, CES-D	About 60% of men reported experiencing police harassment between the baseline and 6-month interview due to their race and/or sexuality. Adjusted analyses suggested police harassment was independently associated with an increase in distress due to experienced racism and homophobia.
First-hand police encounters[a]	Salas-Hernandez *et al.* [12]	Cross-sectional	US city adults	2615	Direct and vicarious experience of police contact	Anticipation of police violence, psychological distress, suicidal ideation and suicide attempt	8-item Expectation of Police Practices Scale (EPPS), 6-item Kessler Psychological Distress Scale (K-6), Single questions on suicidal ideation and attempts	Compared to Positive Police Contact class members, High police violence reported more psychological distress, and extreme police violence reported more distress, and suicidality.

Table 3 (*Continued*)

Category	Study	Study design	Population	Number of participants	Operationalization of exposure	Outcome of interest	Operationalization of outcome	Relevant findings
First-hand police encounters[a]	Singletary *et al.* [13]	Qualitative	Black male adults	12	–	–	–	Participants in the current study reported negative experiences with law enforcement, in addition to extreme, debilitating, psychological distress after witnessing other Black males murdered by police and broadcasted via social media and television
First-hand police encounters	Thompson *et al.* [14]	Cross-sectional	Adults in NYC	2335	Lifetime being stopped by the police, being threatened or abused by police, and experience of racial discrimination by the court system.	Poor physical and mental health, psychological distress	Number of days that mental health was not good in the last 30 days, Kessler Psychological Distress Scale (K6)	Marginalized residents were more likely to be stopped, searched, questioned, threatened, abused by, and discriminated against by the police or in the courts; those experiences were associated with mental health outcomes. The associations between experiences with police and poor health outcomes were strongest among Black residents and residents aged 25 -44.
First-hand police encounters[a]	Turney *et al.* [15]	Cross-sectional	Adolescents	3437	Lifetime history of police stops (personal vs. vicarious vs. none)	Positive future orientation	4-item scale adapted from the EPOCH Measure of Adolescent Wellbeing	Personal police stops, compared to no police stops, are negatively associated with positive future orientation among adolescents. Associations are largest among Black and Hispanic girls. Any exposure to police stops, regardless of features of the stops (including frequency, intrusiveness, resultant stigma, and resultant traumatic stress response), is negatively associated with positive future orientation.
First-hand police encounters	Xiang *et al.* [16]	Cohort	Nationally representative study of people aged 51 years and older in the United States, Health and Retirement Study (HRS)	16 946	Childhood adversity (includes Ever in trouble with the police)	Major depression	Composite International Diagnostic Interview–Short Form (CIDI-SF)	Getting in trouble with the police was associated with a higher rate of depression in later life.
Witnessing police encounters[a]	Jackson *et al.* [6■■]	Cross-sectional	Adolescents from one wave of the Fragile Families Study	3444	Reports of being personally stopped by police and/ or witnessing police stops	Feeling scared, angry, or safe	Single questions: At the time of this incident, did you feel: 1. Scared?, 2. Angry?, 3. Safe?	Black youth compared to white had higher odds of feeling angry and feeling unsafe. Hispanic and multiracial youth also had higher odds. No difference for felt scared

Table 3 (*Continued*)

Category	Study	Study design	Population	Number of participants	Operationalization of exposure	Outcome of interest	Operationalization of outcome	Relevant findings
Witnessing police encounters	Jackson *et al.* [17]	Cross-sectional	Large, national study of children from the Fragile Families and Child Wellbeing Study,	1488	Officer Intrusiveness of police stops	Depression, anxiety and happiness	5-item modified CES-D, 6 item modified Brief Symptom Inventory 18, 4 item modified EPOCH Measure of Adolescent Wellbeing	Among youth witnessing stops, more intrusive witnessed encounters correspond to diminished mental well being across indicators, in part due to elevated emotional distress during witnessed stops.
Witnessing police encounters[a]	Perryman *et al.* [10]	Cross-sectional	Black adolescent high school students	1601	Stopped by police at school, seen others stopped by police at school, Disciplined at school	Depressive symptoms	CES-D	Each subgroup had an incremental increase in mean depressive symptom scores. Compared to the unscathed (control) subgroup, each subgroup also had lower school attachment.
Witnessing police encounters[a]	Salas-Hernandez *et al.* [12]	Cross-sectional	U.S. city adults	2615	Direct and vicarious experience of police contact	Anticipation of police violence, psychological distress, suicidal ideation and suicide attempt	8-item Expectation of Police Practices Scale (EPPS), 6-item Kessler Psychological Distress Scale (K-6), Single questions on suicidal ideation and attempts	Compared to Positive Police Contact class members, High police violence reported more psychological distress, and extreme police violence reported more distress, and suicidality.
Witnessing police encounters [a]	Turney *et al.* [15]	Cross-sectional	Adolescents	3437	Police Stops (personal vs. vicarious vs. none)	Positive Future orientation	4-item scale adapted from the EPOCH Measure of Adolescent Wellbeing	Vicarious police stops, compared to no police stops, are negatively associated with positive future orientation. Associations are largest among Black and Hispanic girls. Any exposure to police stops, regardless of features of the stops (including frequency, intrusiveness, resultant stigma, and resultant traumatic stress response), is negatively associated with positive future orientation.

[a]Paper included in multiple categories.
CES-D, Center for Epidemiologic Studies Depression Scale; GAD, General Anxiety Disorder; PHQ, Patient Health Questionnaire.

to investigate the mental health profiles of Black adolescents who witnessed and experienced school policing. They found that witnessing policing, in addition to experiencing policing, was associated with an increased mean in depressive symptom scores and lower school attachment for members of the latent class. By combining personal and vicarious exposures, this study more fully characterizes the school policing environment, while limiting inference about the relative impact of each type of exposure.

PUBLICIZED INCIDENTS OF POLICE BRUTALITY

While encountering police, either personally or as a witness, can harm individuals' mental health, publicized incidents of police violence can impact entire communities (Table 4) [69,75–80,81▪▪,82]. For example, a study by Eichstaedt *et al.* [75] used panel data to investigate the widespread emotional toll of George Floyd's murder by police. Following Floyd's murder, there was a 1.6-fold increase in population anger, a 1.3-fold increase in population sadness, as well as a 3.2 and 1.2% increase in depression among Black and white Americans, respectively. In addition, in an ecological study of 75 U.S. counties, Das *et al.* [76] found that police killings of unarmed Black people in a county were associated with an 11% increase in depression-related emergency department visits in the following month. Although these studies offer preliminary evidence for the widespread impact of police violence, their outcome measures create potential for bias. For example, the reliance on a two-item screener to measure depression [75] creates potential for misclassification of the outcome, as such screeners are often intended to be used as a 'first-stage' in a multistage screening process [83]. In addition, the use of emergency room visits for depression [76] likely only captures the most extreme depression-related emergencies, as there are many societal factors, such as lack of insurance coverage and stigma, that discourage medical help-seeking for mental health related issues [84,85].

CONCLUSION

In the last 3 years, a growing body of evidence supports the hypothesis that criminalization likely has adverse consequences for mental health, both for people directly exposed to the criminal legal system, as well as for members of targeted communities. These consequences may disproportionately impact Black communities in two distinct ways. First, criminalization may disproportionally impact Black mental health through its racially disproportionate practice. Black people are over-represented in every facet of the criminal legal system, from being subjected to police stops, to incarceration and community surveillance [86–88]. For this reason alone, any mental health consequences of criminalization would be greater for Black communities. Secondly, criminalization may have a greater magnitude of effects on mental health for Black people. For example, first-hand encounters with police may be more traumatic for Black people due to well documented instances of police brutality of unarmed Black people [17], therefore potentially provoking substantially greater anxiety and distress as a result of these encounters. Although many of the reviewed studies adjusted for race or used race-restricted samples, few studies stratified estimates for race, leaving the question of heterogeneous effects largely unanswered.

Although the evidence base for the impact of criminalization on mental health is growing, it is replete with several limitations. In the following section, we outline suggestions for future studies that will advance this literature and provide further insight into the potential mental health harms of criminalization.

Most of the evidence for the effects of criminalization on mental health comes from cross-sectional studies wherein temporal order cannot be established between the experience of criminalization and the emergence of adverse mental health. Temporality is especially important for this question as the reverse relationship (people with mental illness being at a high risk of criminalization) has been well established [1]. To address this limitation, future work is needed that can establish baselines measures of mental health prior to experiences of criminalization. Given the ubiquity of mass criminalization among targeted communities, this may require creative study designs and advanced methods for confounder control.

Two additional limitations are the reliance on highly selected convenience samples that often do not generalize to broader populations in the U.S. (e.g. low-income women recruited from public hospital waiting rooms) and the use of nonvalidated self-reported measures as proxies for mental health status. These limitations often arise as trade-offs: few existing representative datasets contain robust, validated measures of mental disorders and symptomology; those that do, rarely contain necessary information on criminalization. Conversely, datasets with rich information on both the exposure and outcome of interest rarely sample study participants in such a way that inferences can be made to a broader population. We recognize that creating representative samples that will allow for robust

Table 4. Overview of study details and relevant findings from reviewed studies of publicized police brutality incidents and mental health, published 2020−2022 ($n = 9$)

Category	Study	Study Design	Population	Number of Participants	Operationalization of Exposure	Outcome of Interest	Operationalization of Outcome	Relevant Findings
Publicized Police Brutality Incidents	Alexander et al. [1]	Cross-sectional	African Americans who filled out online survey	304	Exposure to media on police-involved killings/injuries	Self-rated mental health	Single-item measure of self-rated mental health (poor, fair, good, very good, or excellent)	Frequency of media exposure not correlated with self-rated health overall. Findings were moderated by engagement in social activism, with more engagement meaning less impact of media exposure
Publicized Police Brutality Incidents	Burch et al. [2]	Cross-sectional	Adults, nationally representative	13.8 million households	Total number of police killings in each state during each week of the HHPS	Anxiety	Single question on feeling on edge	More police killings were associated with higher anxiety, especially for Black respondents and especially right after George Floyd's death
Publicized Police Brutality Incidents	Curtis et al. [3]	Panel Cross-sectional	Nationally represented outcome sample from BRFSS	312 weekly observations of varying sample sizes	High publicity racial violence incidents	National psychological distress, depression, anxiety	Google search terms for suicidality, Poor mental health days in past 30 days (BRFSS)	Racial incidents predicted average poor mental health days among Black but not White BRFSS respondents, though results suggest an association with violence rather than criminalization.
Publicized Police Brutality Incidents	Das et al. [4]	Panel Cross-sectional	US States	75 counties	Presence of police killing (by county-month)	Emergency department visits for depression	Statewide Emergency Department Databases	Police killings of unarmed African–Americans correspond with an 11% increase in emergency department visits per 100 000 population related to depression among African–Americans in the concurrent month and three months following the exposure.
Publicized Police Brutality Incidents	Eichstaedt et al. [5]	Panel Cross-sectional	Nationally representative samples of U.S. Adults	47 355 for the Gallup Study and 319 471 for the US Census Data	Death of George Floyd	Anger, Sadness and Depression and Anxiety screening	Negative Experience Index, PHQ-2, GAD-2	Following Floyd's death, anger and sadness increased, and depression and anxiety severity increased among Black Americans at significantly higher rates than that of White Americans.

Table 4 (*Continued*)

Category	Study	Study Design	Population	Number of Participants	Operationalization of Exposure	Outcome of Interest	Operationalization of Outcome	Relevant Findings
Publicized Police Brutality Incidents	Hawkins *et al.* [6■■]	Qualitative	Convenience sampled Black adults	27	–	–	–	Police brutality harmed the mental health of the participants; highlighting the impact of police brutality on the community even when there is no direct connection to the victim. Analysis revealed that the circulated information of police brutality fuels psychological distress and trauma in the Black community.
Publicized Police Brutality Incidents	Hines *et al.* [7■■]	Cross-sectional	Households in public housing communities in Baltimore	600	Time period relative to the unrest	Depressive symptoms	PHQ-2	After the unrest, the West Baltimore community closer to the unrest reported more depressive symptoms compared with those living further from the unrest. The time period before vs. after the peak of unrest was not associated with greater prevalence of depressive symptoms.
Publicized Police Brutality Incidents	Kyriopoulos *et al.* [8]	Cross-sectional	US State Data	–	Police killings of Black people	Deaths by suicide per 100 000 Black people	U.S. State Data	On months with at least one killing of a Black person by police, there were higher rates of suicide per 100 000 Black Americans in the U.S. Census Division where the killing occurred
Publicized Police Brutality Incidents[a]	Singletary *et al.* [9]	Qualitative	Black male adults	12	–	–	–	Participants reported negative experiences with law enforcement and extreme, debilitating, psychological distress after witnessing other Black men murdered by police and broadcasted via social media and television

CES-D, Center for Epidemiologic Studies Depression Scale; GAD, General Anxiety Disorder; PHQ, Patient Health Questionnaire.
[a]Study included in multiple categories.

measurement of criminalization and mental health will require resource investments, but believe it is necessary to further advance this work.

Finally, this literature can be advanced by further attention to operationalizations of criminalization and carcerality beyond incarceration. Evidence for the public health consequences of incarceration has grown, as mass incarceration has become a defining social feature of the United States. But mass incarceration cannot occur without mass criminalization. Calls to increase police surveillance and further militarize police forces will likely increase numbers of police encounters and incarcerated people. As a result, many more people, especially members of racialized groups, will experience aspects of mass criminalization and surveillance – in schools, hospitals and other civic institutions as well as on the street – but will not ultimately be incarcerated (e.g. those who are stopped and frisked, but not detained). It is therefore important that we fully understand the wide-reaching impacts of an expanding criminal legal system and an expanding carceral state.

The adverse mental health effects of criminalization should be of central concern for mental health researchers, clinicians and advocates, as a population driver of psychological distress and mental wellbeing, and racial inequities therein [89–91]. Although there is a growing body of suggestive evidence, methodological limitations preclude definitive claims at this time. As calls to further expand the role and reach of police and incarceration in cities grow, it is vitally important that we continue to provide empirical evidence of their collateral consequences for mental health.

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