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New York City's Stop, Question, and Frisk Policy and Psychiatric Emergencies among Black Americans

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Abstract Under the Stop, Question, and Frisk (SQF) policy, New York City (NYC) police stopped Black Americans at more than twice the rate of non-Hispanic whites, after controlling for arrests and precinct differences. We examined whether police stops of Black Americans during SQF correspond positively with psychiatric emergency department (ED) visits among Black residents in NYC. We utilized as the exposure all police stops, stops including frisking, and stops including use of force among Black Americans in NYC between 2006 and 2015 from the New York City Police Department's New York City—Stop, Question, and Frisk database. We examined 938,356 outpatient psychiatric ED visits among Black Americans in NYC between 2006 and 2015 from the Statewide Emergency Department Database (SEDD). We applied Box-Jenkins time-series methods to control for monthly temporal patterns. Results indicate that all stops, frisking, and use of force of Black residents correspond with increased psychiatric ED visits among Black Americans in NYC (all stops—coef = 0.024, 95%CI = 0.006, 0.043; frisking—coef = 0.048, 95%CI = 0.015, 0.080;

use of force—coef = 0.109, 95%CI = 0.028, 0.190). Our findings indicate that a one standard deviation increase in police stops equates to a 2.72% increase in psychiatric ED visits among Black residents in NYC. Use of force may have the greatest mental health consequences due to perceived threats of physical violence or bodily harm to other members of the targeted group. Racially biased and unconstitutional police encounters may have acute mental health implications for the broader Black community not directly involved in the encounter itself.

Keywords Police stops · Stop-Question-Frisk · Black mental health · Psychiatric emergency · Use of force

Introduction

In 2011, the New York Police Department (NYPD) conducted 685,000 police stops under the Stop, Question, and Frisk (SQF) Policy [1]. Black and Hispanic New Yorkers accounted for more than 80% of police stops, despite comprising less than 50% of the population [1]. Although stops increased substantially under the SQF policy, 90% of stops resulted in no arrest [1]. Scholars find racial disparities in police stops with one study reporting that the NYPD stopped Black Americans at greater than two times the rate of non-Hispanic whites, after controlling for arrests and precinct differences [2, 3]. Racial disparities also

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exist in post-stop outcomes, such as frisking and use of force [4]. Scholars posit that police stops serve as the most common institutional source of maltreatment among Black, Indigenous, and People of Color (BIPOC) communities [5]. The racial bias in police stops therefore incites greater distrust of police and holds broader health implications in these communities [5].

Based on Broken Windows Policing, the SQF policy directed police action against lower levels of crime to create greater social order and prevent the proliferation of more serious crimes [6]. Although Broken Windows theory lacks compelling empirical support, the SQF policy allowed officers to stop, question, and search individuals under reasonable suspicion [1, 7–9]. Substantial research finds disproportionate police practices and misconduct during stops in the Black community including surveillance, stops, disrespectful treatment, verbal abuse, police deviance, arrests, and fewer police protections [10]. Distrust in the police results from personal experiences, as well as the overall nature of policing within Black communities [10]. Qualitative research also uncovers that proactive policing from frequent pedestrian and police stops becomes regarded as unfair and routine harassment within a community [10]. In a nationally representative study, Kessler et al. find that the perception of unfairness from discrimination corresponds with greater psychological distress and major depressive disorder [11]. After disaggregating results by types of unfairness from discrimination, the authors report a positive relation between being harassed by the police and major depressive disorder [11].

Moreover, scholars report that residents live in a climate of fear from the potential of criminalization [12–15]. This circumstance creates greater hypervigilance in which individuals constantly assess potential threats and exhibit a state of increased alertness [13]. One study suggests that police altercations, as opposed to community violence, result in greater hypervigilance and physiological changes such as higher blood pressure [13]. Hypervigilance from potential police encounters may also lead to greater mental health symptoms [14, 15]. Scholars also find that youth with anticipatory stress from police violence experienced greater symptoms of anxiety, depression, and post-traumatic stress disorder [16].

Much literature examines the mental health of individuals following police stops. Longitudinal studies,

following Black youth over time, find that individuals experience greater depressive and post-traumatic stress symptoms, as well as heightened anger, feeling unsafe, and emotional distress following police stops [17–20]. Additionally, one cross-sectional study reports elevated mental health symptoms among men living in neighborhoods with a high level of police stops [21]. Other scholars report that individuals living in neighborhoods with greater police stops and reporting poor health show less frequent use of the emergency department (ED) due to “system avoidance.” [22, 23] Justice-involved individuals may also avoid surveilling institutions that may implicate criminality [23]. Another study examined police stops in New York City (NYC) during SQF and reported that neighborhood-level police stops including frisking or use of force correspond with greater mental health symptoms, including severe feelings of nervousness and worthlessness [24].

The current literature, although suggestive, remains limited in the following ways. First, previous work is cross-sectional and therefore cannot examine whether police stops during SQF in NYC preceded greater help-seeking for psychiatric conditions—including among those not directly involved in the stop. Police stops may affect not only Black residents who themselves are stopped, but also a broader group who senses elevated hypervigilance by the State, or heightened targeting in their community. Additionally, although scholars have previously reported greater mental health symptoms in neighborhoods with heightened police stops during the SQF policy, we examine whether police stops may influence more acute forms of adverse mental health that require emergency psychiatric care.

Second, examination of police stops and ED visits has previously assessed overall ED utilization rather than psychiatric help-seeking in the ED. Unlike overall ED utilization, Black Americans—despite notions of “system avoidance”—continually show disproportionate use of emergency psychiatric services [25]. Researchers find that in addition to mental health system characteristics, such as access to outpatient care, sociocultural and community characteristics play a role in the disparate use of the ED for psychiatric care [25]. Characteristics such as personal distress in disadvantaged communities and greater stigmatizing attitudes towards routine mental health treatment contribute to overuse of the ED setting for psychiatric

care by Black Americans in the US [25]. Scholars further find that untreated mental illness often results in seeking emergency care [25]. Increased police stops may especially incite greater psychiatric help-seeking by way of greater perceived discrimination and hypervigilance.

Third, previous ecological research on police stops during SQF and mental health does not examine racial/ethnic differences. At the height of the SQF policy, Black Americans in NYC comprised 52% of police stops and only 23% of the population. Hispanic populations also experienced a disproportionate number of police stops when compared to the ethnic makeup of NYC (31% of stops vs. 29% of the population), although to a much lesser extent than do Black individuals [26]. Additionally, Hispanic communities, on average, report fewer mental health concerns than do native-born Americans, often referred to as the "Hispanic Paradox." [27] This paradox has also been shown in Black populations; however, studies report that differences in symptom expression as well as underdiagnosis of mood disorders by clinicians may drive the Black-White paradox [28–31]. Moreover, frameworks such as the Environmental Affordances Model posit that Black populations cope with additional exposure to stressors by engaging in unhealthy behaviors [32]. This coping allegedly leads to greater physical illness but protects against mental illness by way of physiological pathways [32]. Researchers, however, find conflicting empirical evidence to support the model when examining nationally representative samples, over time [33]. For these reasons, we focused on the relation between SQF and mental health among Black (relative to white) residents. As such, this exposure may particularly influence mental health in the NYC Black community more broadly through unfair discrimination and hypervigilance. Given that Black Americans also show the highest prevalence of chronic major depressive disorder, elevated hypervigilance as a result of SQF may lead to an increase in psychiatric emergencies in this subgroup [34].

We address these limitations and extend previous literature by examining whether police stops during NYC's SQF policy correspond positively with greater psychiatric ED visits among Black individuals. We leverage month-to-month variation in police stops and in psychiatric emergency department visits among Black residents in NYC between 2006 and 2015.

Given the study design characteristics of the analysis, results may hold particular relevance to understanding the potentially causal role of hypervigilance and discrimination on Black Americans' mental health.

Materials and Methods

Study Population

We retrieved the outcome, incidence of outpatient psychiatric ED visits among non-Hispanic Black individuals in NYC, from the Statewide Emergency Department Database (SEDD) [35]. Under the Healthcare Cost and Utilization Project, the Agency for Healthcare Research makes SEDD available for purchase. Participating states provide information on over 99% of all outpatient ED visits through SEDD [35]. SEDD contains encounter-level information on all hospital-affiliated ED visits [35]. Additionally, the psychiatric epidemiology literature consistently uses this high-quality database [36–38]. We selected the five counties within NYC which correspond with the five boroughs in the city (New York County—Manhattan; Kings County—Brooklyn; Bronx County—Bronx; Richmond County—Staten Island; and Queens County—Queens) [39]. These data uniformly report county identifiers, race/ethnicity, and month of visit, allowing for time-series analysis at the city-month from 2006 to 2015 [35].

Measures

We retrieved outpatient psychiatric ED visits from encounter-level diagnoses of ICD-10 codes for psychiatric disorders among Black residents in NYC. Consistent with previous literature, we classified psychiatric ED visits using ICD-10 diagnostic codes contained within Clinical Classification Software (CCS) categories for psychiatric disorder (including mood, anxiety, conduct, behavioral disorders, self-harm, suicidal ideation, substance use, and others) [36–38]. We obtained monthly counts of psychiatric ED visits among non-Hispanic Black and non-Hispanic white individuals in NYC from 2006 to 2015.

For the exposure, we obtained administrative data on pedestrian police stops from 2006 to 2015 from the New York City Police Department's New York City—Stop, Question, and Frisk database [40]. This

database enjoys widespread use in the literature [2, 5, 24]. These data provide stop-level information on race/ethnicity, date of stop, and post-stop outcomes [40]. We examined monthly counts of police stops and two post-stop outcomes among Black individuals: stops including frisking and use of force. Stops including frisking involve patting hands over a pedestrian's clothes and through pockets [40]. Use of force measures nine outcomes: use of officer's hands, placing a suspect on the ground, placing a suspect against the wall, drawing the officer's weapon, pointing the weapon at the suspect, using a baton, using handcuffs, using pepper spray, or using another physical object [40]. Consistent with previous literature, we examined stops including frisking and use of force independently [24]. Additionally, in keeping with prior work on criminal justice exposures and mental health outcomes, we specified 0- to 3-month lags in which police stops may precede help-seeking among Black residents in NYC [41, 42]. Together, the NYC psychiatric ED and police stop data created a time series of 120 months from January 2006 to December 2015.

Analysis

We test whether psychiatric ED visits increase within 0–3 months following total police stops. Previous literature has utilized an induction period of 3 months for mental health outcomes [41, 42]. We then test psychiatric ED visits as a function of two subsets of overall police stops: (1) stops including frisking and (2) stops including use of force. Psychiatric ED visits may exhibit patterns over time, also referred to as autocorrelation [43, 44]. Autocorrelation may include trend, seasonality, or the tendency to remain elevated or depressed following high or low values [43, 44]. Autocorrelation violates the assumption of correlational tests because, in our case, the expected value of psychiatric ED visits in any month would not equal the mean value of psychiatric ED visits across all months, but rather the values predicted from autocorrelation [43, 44].

To address this issue, we conducted Autoregressive, Integrated, Moving Average (ARIMA) analysis methods using Scientific Computing Associates (SCA) software [45]. We utilized the following steps,

consistent with the time-series literature, to identify and remove autocorrelation:

1. We regressed monthly counts of psychiatric ED visits among non-Hispanic whites to remove autocorrelation shared with Black Americans [46]. The use of non-Hispanic white psychiatric ED visits as a control variable adjusts for well-documented secular increases in help-seeking for psychiatric care in the US, as well as shared seasonality and other patterns in ED utilization across the two race/ethnicities [44].
2. We used Box-Jenkins time-series methods to identify and model autocorrelation in the residuals of the monthly counts of psychiatric ED visits for Black individuals in NYC [46].
3. We added the SQF exposure variable and specified a Box-Jenkins test equation accounting for autocorrelation. We added 0–3-month lags to the exposure variable, consistent with previous research which has reported a three-month induction period [46].
4. We estimated the following equation:

$$BV_t = c + \omega_1 WV_t + \omega_2 BP_t + \omega_3 BP_{t-1} + \omega_4 BP_{t-2} + \omega_5 BP_{t-3} + (1 - \theta B^q) / (1 - \phi B^p) a_t$$

where

BV_t is the count of psychiatric ED visits among Black residents in NYC in month t

c is a constant

ω_1 through ω_5 are effect parameters

WV is the count of psychiatric ED visits among non-Hispanic whites in month t

BP_{t-1} through BP_{t-3} are the lagged count variable of Black American police stops in months t , $t-1$, $t-2$, $t-3$

θ is a moving average parameter

ϕ is an autoregressive parameter

B is the "backshift operator," or value of a for month $t-q$ or at month $t-p$

a_t is the residual of the model at month t

5. We conducted an outlier analysis to determine whether outliers in psychiatric ED visits among Black Americans in NYC distorted the estimation by inflating standard errors and whether high or low values drive the association.

6. We conducted a sensitivity analysis in which we utilized police stops, stops including frisking, and stops including the use of force that did not result in an arrest. This analysis accounts for arrests that may have resulted in psychiatric ED visits.

The institution's Institutional Review Board deemed this study exempt owing to the use of publicly available, de-identified data. The National Institute of Mental Health (R21 MH110815) provided support for this study.

Results

Figure 1 plots the observed count of psychiatric ED visits among Black Americans in NYC (mean monthly count = 7819.63; SD = 2668.10). Black individuals in NYC have a mean monthly count of 18,235.03 police stops (SD = 10,621.21) with a range of 626 to 36,346 stops (Table 1). Figure 2 A–C show the observed count of police stops, stops including frisking, and stops including use of force among the Black community

over 120 months (January 2006–December 2015). Stops including the use of force account for between 20 and 35% of all police stops (depending on the month).

As described in the “Materials and Methods” section, we began our analyses by building a base model in which we estimated monthly changes in psychiatric ED visits among Black Americans in NYC as a function of the monthly changes in psychiatric ED visits among non-Hispanic whites (Appendix Fig. 4). The Autocorrelation Function and Partial Autocorrelation Function revealed patterning and we inserted an autoregressive parameter at lag 1 month to control for the observation that high or low values of ED visits were followed, albeit in diminishing amounts, with similarly high or low values 1 month later. After adding the police stop exposure variable, we detected high or low values in psychiatric ED visits that “echoed” at month 5 and therefore inserted another autoregressive parameter at lag 5 months. The residuals of this equation exhibited no remaining autocorrelation, had a mean of zero, and all estimated ARIMA coefficients exceeded at least twice their standard errors. Appendix Fig. 3 plots the residual count of

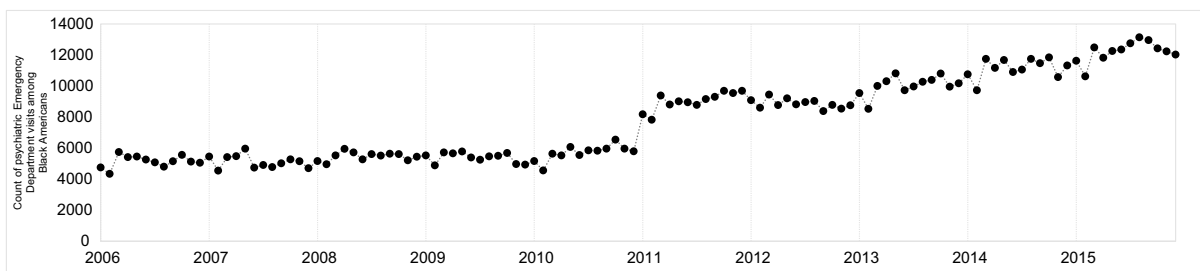


Fig. 1 Count of psychiatric emergency department visits among Black Americans over 120 months in New York City, 2006–2015

Table 1 Characteristics of monthly psychiatric Emergency Department visits, police stops, stops including frisking, and stops including use of force among Black Americans in New York City, 2006–2015

Variable	Mean (SD)
Psychiatric ED visits among Black Americans ^a	7819.63 (2668.10)
Psychiatric ED visits among whites ^a	5729.63 (1795.80)
Police stops among Black Americans ^a	18,235.03 (10,621.21)
Police stops including frisking among Black Americans ^a	10,179.66 (5907.63)
Police stops including use of force among Black Americans ^a	4035.29 (2420.24)

^aNon-Hispanic

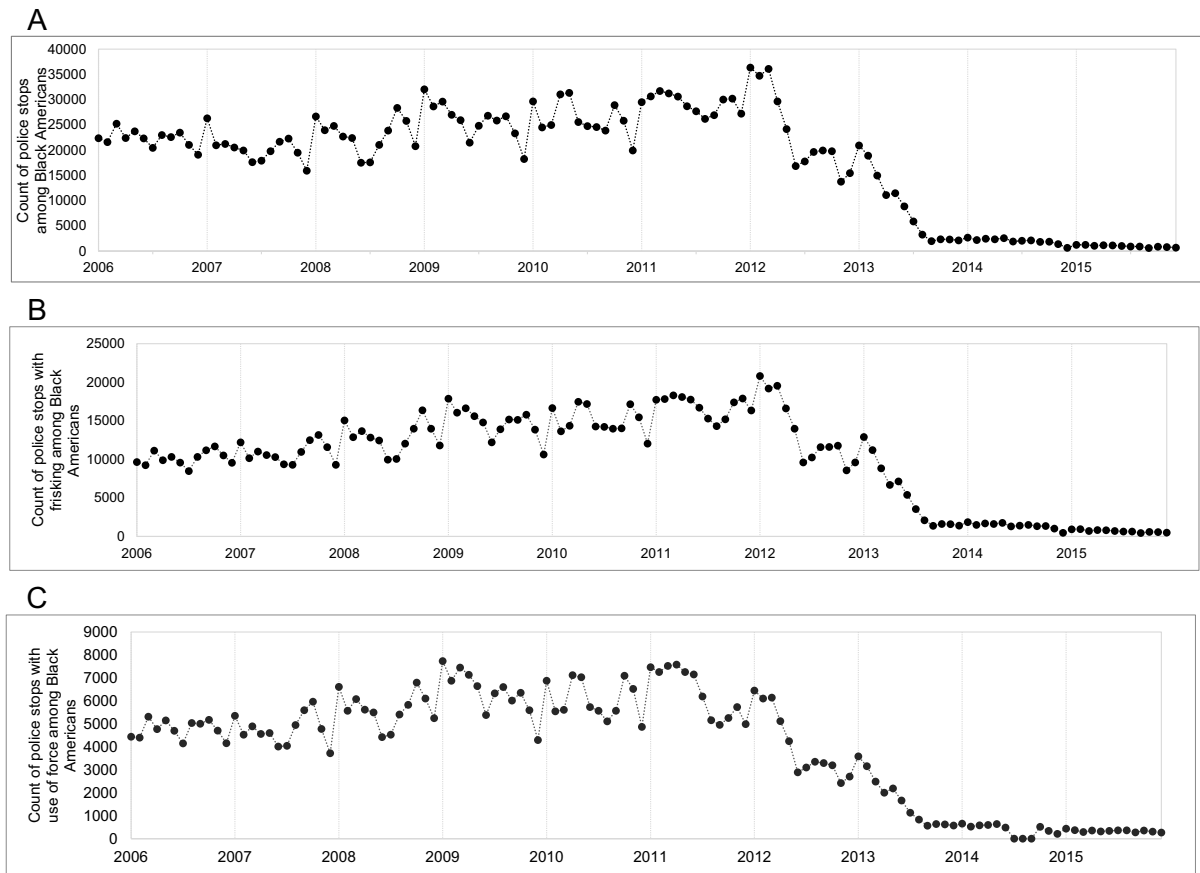


Fig. 2 Count of police stops among Black Americans over 120 months in New York City, 2006–2015. Panel **A** plots total police stops. Panel **B** plots police stops including frisking. Panel **C** plots police stops including use of force

psychiatric ED visits among Black Americans in NYC after the removal of autocorrelation.

Table 2 presents results from the three final models predicting psychiatric ED visits as a function of (i) police stops, (ii) stops including frisking, and (iii) stops including the use of force. Total police stops coincide with an increase of 0.02 psychiatric ED visits among Black individuals in the same month [95%CI=0.006,0.043] (Model A). Similarly, stops including frisking and stops including use of force show a positive relation with psychiatric ED visits in the same month (for frisking, coef: 0.05, [95%CI=0.015, 0.080], and for use of force, coef: 0.11, [95%CI=0.028, 0.190]) (Models B and C). Results from the outlier-adjusted models produced

a similar inference to the original tests (Appendix Table 3).

To give the reader a sense of the magnitude of the relation, we estimated (from Table 2) the number of psychiatric ED visits among Black Americans in NYC statistically attributable to one standard deviation increase in all police stops, stops including frisking, and stops including use of force. The monthly standard deviation in the count of all stops (10,621.21) multiplied by the coefficient in Table 2 (0.02 at no lag) indicates 212.42 greater than expected psychiatric ED visits in the Black community per month in which police stops for Black Americans in NYC rose by one standard deviation. Application of this increase to the mean equates to 2.72% increase

Table 2 Time-series results predicting the psychiatric Emergency Department visits among Black Americans^a in New York City from 2006 to 2015, as a function of police stops,stops including frisking, and stops including use of force among Black Americans^a in New York City

Parameter	Model A Police stops		Model B Stops including frisking		Model C Stops including use of force	
	Point estimate	(95%CI)	Point estimate	(95%CI)	Point estimate	(95%CI)
Police stops at t	0.024	(0.006, 0.043)*	0.048	(0.015, 0.080)**	0.1087	(0.028, 0.190)**
at $t+1$	-0.009	(-0.026, 0.008)	-	-	-	-
at $t+2$	-0.001	(-0.020, 0.017)	-	-	-	-
at $t+3$	0.001	(-0.017, 0.020)	-	-	-	-
Psychiatric ED visits among whites ^a at t	1.307	(1.218, 1.395)**	1.260	(1.169, 1.351)**	1.269	(1.174, 1.364)**
Autoregressive parameter (AR) at $t-1$	0.770	(0.638, 0.902)**	0.820	(0.701, 0.939)**	0.837	(0.722, 0.953)**
Autoregressive parameter (AR) at $t-5$	0.292	(0.096, 0.487)**	0.301	(0.107, 0.495)**	0.278	(0.083, 0.473)**

* $p < 0.05$; ** $p < .001$ ^aNon-Hispanic

in psychiatric ED visits among Black individuals in these months. Using the same method, a standard deviation increase in stops including frisking equates to a 3.78% increase, and for stops including use of force, we find a 3.71% increase in psychiatric ED visits among Black Americans in NYC.

Some police stops may result in a police-initiated psychiatric ED visit. As such, we conducted a sensitivity analysis in which we removed from the exposure variable police stops that resulted in an arrest. We then examined its relation with psychiatric ED visits. This sensitivity analysis examines whether the detected positive relation in the original test could arise from arrests which “convert” into a police-initiated psychiatric ED visit. Inference from our sensitivity analysis, however, remains essentially unchanged from our original findings (Appendix Table 4), which precludes the possibility that this explanation drives the results.

Discussion

The NYC SQF policy increased the number of stops by 600% from 2002 to 2011. Even after adjustment

for arrest rates and precinct differences, studies report that police disproportionately stopped Black and Hispanic individuals [2, 3]. We examined whether police stops and stops including frisking or use of force correspond with an increase in psychiatric ED visits among Black Americans in NYC. We find that monthly police stops correspond with modestly but statistically detectable increases in psychiatric ED visits in that same month. All police stops, stops including frisking, and stops including use of force vary positively with psychiatric help-seeking in the broader Black community, much of whom are unlikely to have been directly connected to any stop and frisk event.

Theories on policing in Black communities offer a plausible explanation for these results. Police encounters as well as greater frisking and use of force may correspond with increased hypervigilance and perceptions of unfair discrimination and the need for emergent psychiatric care [10, 11]. This response may occur by way of greater depressive and anxiety symptoms or by acute awareness of these existing symptoms [10, 11]. Our findings further support this notion in that frisking has a stronger relation than regular stops, and stops

with use of force show the strongest relation. Use of force may have the greatest mental health consequences due to perceived threats of physical violence or bodily harm to other members of the targeted group. Further research would benefit from examining whether police stops may precede greater ED visits associated with physical health such as cardiac arrest. Psychiatric ED utilization comprises visits related to various mental health diagnoses including anxiety, depression, and substance use [47]. We urge future work to develop hypotheses about diagnostic-specific responses and investigate whether a subset of these ED visits increase in months of heightened police stops. Additionally, the influence of police stops on psychiatric help-seeking and mental health symptomology may decrease over time. Our study reports heightened psychiatric help-seeking only in the concurrent month and not months following an increase in police stops. Use of datasets such as the Fragile Families and Child Wellbeing Study may further examine whether this phenomenon occurs among Black youth or adults over the life course [48].

Strengths of the study include that we measure a time-varying aspect of a plausible manifestation of structural racism, which allows us to rigorously examine the relation between police stops and a clinically meaning health outcome (i.e., psychiatric ED visit). The associations, moreover, cannot arise from shared seasonality or a “third variable” that exhibits autocorrelation (i.e., arrests for criminal activity), because we removed such autocorrelation from psychiatric ED visits among Black Americans in NYC. Adjusting for psychiatric ED visits among non-Hispanic whites also minimizes the threat of confounding by variables that influence help-seeking of psychiatric ED visits in both non-Hispanic whites and Black Americans [44]. Removing trends and seasonality after controlling for non-Hispanic white ED utilization also adjusts for differences in the level of help-seeking among non-Hispanic whites and Black Americans in NYC. Additionally, we used a comprehensive dataset comprising the census of psychiatric ED visits in NYC spanning the five counties (boroughs). We also utilized

clinically diagnosed psychiatric ED visits based on ICD-10 codes. Lastly, we obtained surveillance data of police stops among Black residents in NYC that plausibly capture mental health effects of others in the Black community [49, 50].

Limitations include the inability to examine whether police initiated a psychiatric ED visit among individuals they stopped. Individual-level registries or information on police-initiated ED visits may provide the data necessary to conduct such a test. Although the SEDD does not provide information on police-initiated ED visits for the state of New York, we approximated police-initiated ED visits by analyzing stops that did not result in an arrest and the possible transfer to an ED or an involuntary commitment [35]. Results remain consistent with our original findings for stops including frisking and stops including use of force. In addition, the discovered coefficients likely represent the lower bound of acute mental health in the population as not all individuals with acute symptoms seek emergency psychiatric care. Lastly, the intensity of police stops may vary by NYC borough or police precinct. Further analysis at more finely grained geographic and spatial resolution (i.e., NYC United Hospital Funds, census tracts) may provide targeted, neighborhood-level identification of the relation between police stops and psychiatric emergencies. However, given that the SQF policy encompassed all of NYC, a policy-relevant examination of the external validity of our results appears warranted. Cities such as Los Angeles, for example, currently surveil and report racial disparities in police stops; such data, when combined with psychiatric ED data, may permit replication of our work [51]. In addition, our results may hold relevance to other urban areas as researchers find a higher prevalence of smoking, physical inactivity, and poor physical health in neighborhoods that experience more police encounters (e.g., in New Orleans) [52].

The SQF policy not only targeted racial/ethnic minoritized groups, but also directed police action against men in NYC—with men constituting 88% of police stops [3]. One study also reports greater

post-stop outcomes (i.e., frisking, use of force, arrests) among Black men and women than their non-Hispanic white counterparts [53]. Although we did not have any specific hypotheses regarding the gendered component of NYC's SQF policy, we speculate that theories on intersectionality and Black feminist theory may provide further insight into heightened adverse mental health following aggressive policing [54]. Overlapping and interdependent systems of discrimination and disadvantage, resulting from intersectionality, may particularly have health implications from policing in the Black community. Moreover, examining subgroups within the Black community that police may not have targeted (i.e., women, older adults) could assess the complexities of the spillover effects of aggressive policing practices.

Previous literature finds police killings of unarmed Black Americans precede an increase in bad mental health days and ED visits for depression among Black individuals [41, 42]. The police killing of George Floyd prompted urgent calls for racial equity in policing and other systems in the USA—bringing concerns of structural racism to the forefront. Researchers also report that police killings of unarmed Black Americans may serve as indicators for structural racism [41, 42, 55, 56]. The SQF policy, and the disproportionate police stops among Black and Hispanic communities, may constitute as a structurally racist policy in the criminal justice system. In August 2013, the *Floyd et al. v. City of New York* class action lawsuit found the NYPD liable for a pattern and practice of racial profiling and unconstitutional stops [26]. Following the ruling, scholars report a decline in the racial/ethnic disparity in police stops [55]. Further research may benefit from examining structural changes in policing behavior that reduce unconstitutional police stops in other urban environments. These changes within policing may have salutary benefits for broader community health.

Origins of the Black Lives Matter movement began following the police killing of Trayvon Martin and the subsequent acquittal of officer George

Zimmerman in 2013. Demonstrations and protests supporting the movement have continued following police brutality and killings in later years [56]. A systematic review on the influence of protests and riots on mental health finds that a majority of studies report an increase in depression following a major protest [57]. This relation persists regardless of personal involvement in protests, suggesting a broader influence on a community [57]. However, a few studies suggest that protests may reduce depression due to greater collective action and social cohesion [57]. These results warrant further investigation into the potential benefits of collective action and whether the Black Lives Matter protests may have a protective influence on psychiatric help-seeking.

Black American youth suicides have increased drastically in the past two decades, with certain age groups surpassing rates of non-Hispanic whites [58, 59]. Risk factors include, among others, exposure to trauma and racial discrimination [60]. A current body of literature finds that police stops precede greater adverse mental health in youth [17–20]. However, police encounters may also influence youth suicide rates in the Black community given that psychiatric disorders remain a significant risk factor for suicide [61]. Literature also reports that youth involved in the juvenile justice system have higher rates of mental health disorders and traumatic experiences [62, 63]. An important priority of subsequent research in this area involves examination of whether racially biased and unconstitutional police encounters among Black youth may worsen various aspects of mental health in this high-risk population.

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Author Contribution AD developed the research question and conducted the analysis. AD wrote the first draft of the manuscript. TB assisted with the analysis, interpretation, and writing.

Data Availability Aggregated datasets and/or code provided upon request from the corresponding author.

Appendix

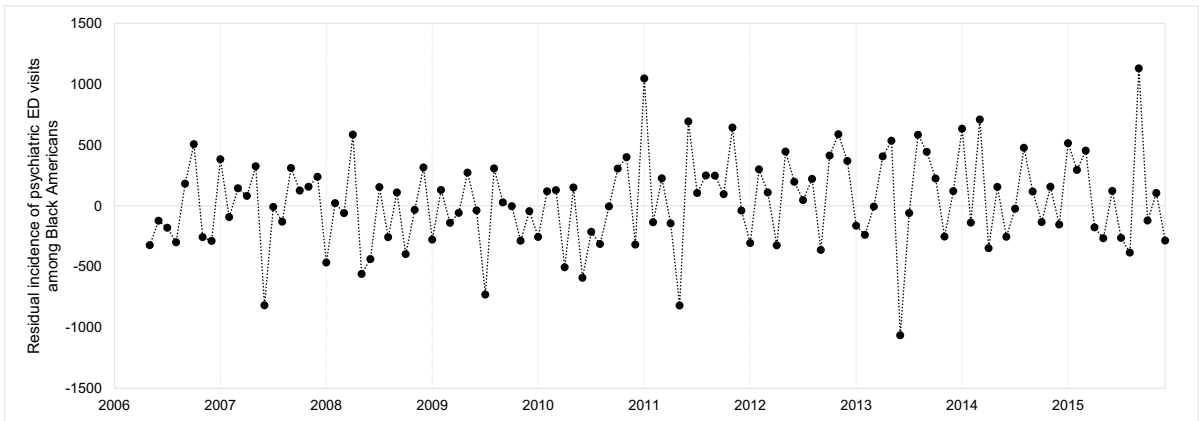


Fig. 3 Residual count of psychiatric ED visits among Black Americans in New York City, 2006–2015, with mean=0, after controlling for psychiatric ED visits among non-Hispanic white

Americans and removal of autocorrelation. First 4 months lost to time-series modeling

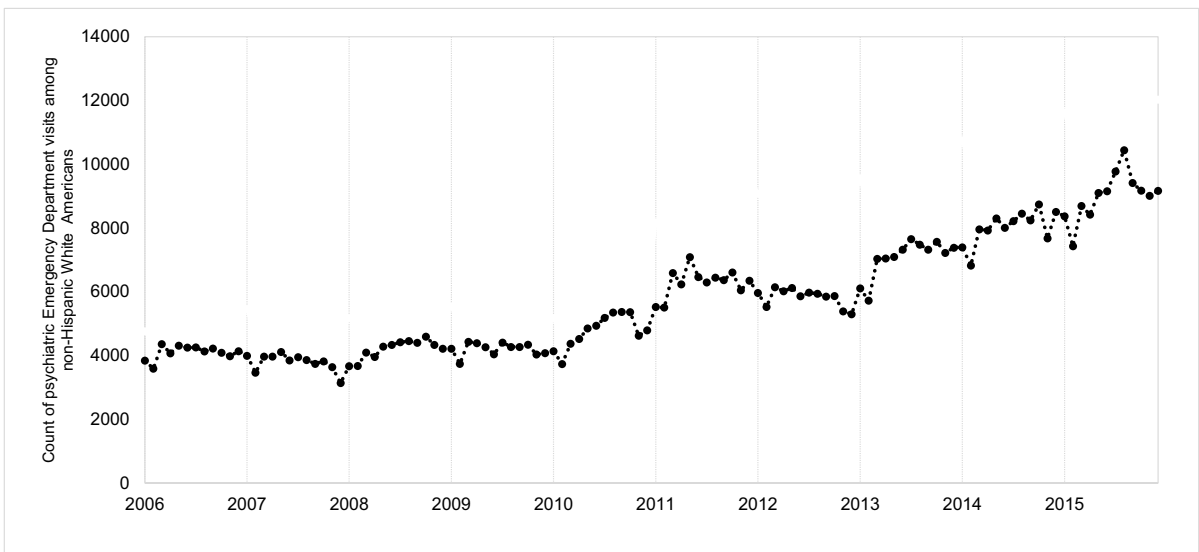


Fig. 4 Count of psychiatric Emergency Department visits among non-Hispanic white Americans over 120 months in New York City, 2006–2015

Table 3 Outlier-adjusted time-series results predicting psychiatric Emergency Department visits among non-Hispanic Black in New York City from 2006 to 2015, as a function of police stops, stops including frisking, and stops including use of force among Black Americans in New York City

Parameter	Model A Police stops		Model B Stops including frisking		Model C Stops including use of force	
	Point estimate	95%CI	Point estimate	95%CI	Point estimate	95%CI
Police stops at t	0.016	(0.001, 0.030)*	0.025	(.007, 0.043)**	0.058	(0.013, 0.102)*
at $t+1$	-0.005	(-0.019, 0.008)	-	-	-	-
at $t+2$	0.003	(-0.011, 0.017)	-	-	-	-
at $t+3$	-4E-04	(-0.015, 0.014)	-	-	-	-
Psychiatric ED visits among whites ^a at t	1.234	(1.193, 1.274)**	1.221	(1.183, 1.259)**	1.222	(1.185, 1.260)**
Autoregressive parameter (AR) at $t-1$	0.629	(0.476, 0.781)**	0.635	(0.486, 0.785)**	0.425	(0.276, 0.574)**
Autoregressive parameter (AR) at $t-5$	0.320	(0.133, 0.507)**	0.313	(0.129, 0.497)**	0.309	(0.124, 0.493)**

* $p < 0.05$; ** $p < .001$

^aNon-Hispanic

Table 4 Time-series results predicting psychiatric emergency department visits among Black Americans^a in New York City from 2006 to 2015, as a function of police stops, stops including frisking, and stops including use of force that did not result in an arrest

Parameter	Model A Police stops		Model B Stops including frisking		Model C Stops including use of force	
	Point estimate	95%CI	Point estimate	95%CI	Point estimate	95%CI
Police stops at t	0.025	(0.006, 0.045)*	0.050	(0.031, 0.070)**	0.120	(0.029, 0.211)**
at $t+1$	-0.010	(-0.028, 0.008)	-	-	-	-
at $t+2$	-0.001	(-0.020, 0.019)	-	-	-	-
at $t+3$	0.002	(-0.018, 0.021)	-	-	-	-
Psychiatric ED visits among whites ^a at t	1.306	(1.217, 1.395)**	1.272	(1.183, 1.360)**	1.273	(1.181, 1.366)**
Autoregressive parameter (AR) at $t-1$	0.771	(0.639, 0.903)**	0.817	(0.697, 0.937)**	0.834	(0.717, 0.950)**
Autoregressive parameter (AR) at $t-5$	0.291	(0.095, 0.487)**	0.301	(0.107, 0.494)**	0.278	(0.084, 0.483)**

* $p < 0.05$; ** $p < .001$

^a Non-Hispanic

References

1. Report: NYPD stop-and-frisk activity. New York Civil Liberties Union. Published May 8, 2012. Accessed April 27, 2021. <https://www.nyclu.org/en/publications/report-nypd-stop-and-frisk-activity-2011-2012>
2. Gelman A, Fagan J, Kiss A. An analysis of the New York City Police Department's "stop-and-frisk" policy in the context of claims of racial bias. *J Am Stat Assoc.* 2007;102(479):813–23. <https://doi.org/10.1198/016214506000001040>.
3. Ridgeway G. *Analysis of racial disparities in the New York Police Department's stop, question, and frisk practices.* Santa Monica, CA: RAND Corporation; 2007.
4. Levchak PJ. Stop-and-frisk in New York City: estimating racial disparities in post-stop outcomes. *J Crim Just.* 2021;73:101784. <https://doi.org/10.1016/j.jcrimjus.2021.101784>.
5. Sewell AA, Jefferson KA. Collateral damage: the health effects of invasive police encounters in New York City. *J Urban Health.* 2016;93:42–67.
6. Broken Windows - The Atlantic. Published 1982. Accessed April 16, 2021. <https://www.theatlantic.com/magazine/archive/1982/03/broken-windows/304465/>
7. O'Brien DT, Farrell C, Welsh BC. Broken (windows) theory: a meta-analysis of the evidence for the pathways from neighborhood disorder to resident health outcomes and behaviors. *Soc Sci Med.* 2019;228:272–92. <https://doi.org/10.1016/j.socscimed.2018.11.015>.
8. O'Brien DT, Farrell C, Welsh BC. Looking through broken windows: the impact of neighborhood disorder on aggression and fear of crime is an artifact of research design. *Ann Rev Criminol.* 2019;2(1):53–71. <https://doi.org/10.1146/annurev-criminol-011518-024638>.
9. Harcourt B. Illusion of order: the false promise of broken windows policing. *Faculty Books.* Published online January 1, 2001. <https://scholarship.law.columbia.edu/books/114>. Accessed 27 Apr 2021.
10. Brunson RK, Miller J. Young black men and urban policing in the United States. *Br J Criminol.* 2006;46(4):613–40. <https://doi.org/10.1093/bjcz/azi093>.
11. Kessler RC, Mickelson KD, Williams DR. The prevalence, distribution, and mental health correlates of perceived discrimination in the United States. *J Health Soc Behav.* 1999;40(3):208–30. <https://doi.org/10.2307/2676349>.
12. La Vigne N, Lachman P, Matthews A, Neusteter SR. Key issues in the police use of pedestrian stops and searches: (527872013–001). *Published online.* 2012. <https://doi.org/10.1037/e527872013-001>.
13. Smith, Voisin DR, Yang JP, Tung EL. Keeping your guard up: hypervigilance among urban residents affected by community and police violence. *Health Aff.* 2019;38(10):1662–1669. <https://doi.org/10.1377/hlthaff.2019.00560>
14. E. Lipscomb A, Emeka M, Bracy I, et al. Black male hunting! A phenomenological study exploring the secondary impact of the police induced trauma on the Black man's psyche in the United States. *JSSW.* 2019;7(1). <https://doi.org/10.15640/jssw.v7n1a2>
15. Alang S, McAlpine D, McClain M. Police encounters as stressors: associations with depression and anxiety across race. *Socius.* 2021;7:2378023121998128. <https://doi.org/10.1177/2378023121998128>.
16. Webb L, Jackson DB, Jindal M, Alang S, Mendelson T, Clary LK. Anticipation of racially motivated police brutality and youth mental health. *Journal of Criminal Justice.* Published online July 14, 2022:101967. <https://doi.org/10.1016/j.jcrimjus.2022.101967>
17. Turney K. Depressive symptoms among adolescents exposed to personal and vicarious police contact. *Society and Mental Health.* Published online July 3, 2020:2156869320923095. <https://doi.org/10.1177/2156869320923095>
18. Jackson DB, Del Toro J, Semenza DC, Testa A, Vaughn MG. Unpacking racial/ethnic disparities in emotional distress among adolescents during witnessed police stops. *J Adolesc Health.* Published online April 2021:S1054139X21001063. <https://doi.org/10.1016/j.jadohealth.2021.02.021>
19. Jahn JL, Agenor M, Chen JT, Krieger N. Frequent police stops, parental incarceration and mental health: results among US non-Hispanic Black and White adolescent girls and boys. *J Epidemiol Community Health.* Published online December 23, 2020:jech-2020–214578. <https://doi.org/10.1136/jech-2020-214578>
20. Jackson DB, Fahmy C, Vaughn MG, Testa A. Police stops among at-risk youth: repercussions for mental health. *J Adolesc Health.* 2019;65(5):627–32. <https://doi.org/10.1016/j.jadohealth.2019.05.027>.
21. 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. <https://doi.org/10.2105/AJPH.2014.302046>.
22. Kerrison EM, Sewell AA. Negative illness feedbacks: high-frisk policing reduces civilian reliance on ED services. *Health Serv Res.* 2020;55(S2):787–796. <https://doi.org/10.1111/1475-6773.13554>
23. Brayne S. Surveillance and system avoidance: criminal justice contact and institutional attachment. *Am Sociol Rev.* 2014;79(3):367–91. <https://doi.org/10.1177/0003122414530398>.
24. Sewell AA, Jefferson KA, Lee H. Living under surveillance: gender, psychological distress, and stop-question-and-frisk policing in New York City. *Soc Sci Med.* 2016;159:1–13. <https://doi.org/10.1016/j.socscimed.2016.04.024>.
25. Snowden LR, Catalano R, Shumway M. Disproportionate use of psychiatric emergency services by African Americans. *Psychiatr Serv.* 2009;60(12):1664–71.
26. Floyd, et al. v. City of New York, et al. Center for constitutional rights. Accessed July 16, 2022. <https://ccrjustice.org/node/1765>
27. Franzini L, Ribble JC, Keddie AM. Understanding the Hispanic paradox. *Ethn Dis.* 2001;11(3):496–518.
28. Neighbors HW, Trierweiler SJ, Ford BC, Muroff JR. Racial differences in DSM diagnosis using a semi-structured instrument: the importance of clinical judgment in the diagnosis of African Americans. *J Health Soc Behav.* 2003;44(3):237–56. <https://doi.org/10.2307/1519777>.
29. Neighbors HW, Jackson JS, Campbell L, Williams D. The influence of racial factors on psychiatric diagnosis: a review and suggestions for research. *Community Ment Health J.* 1989;25(4):301–11. <https://doi.org/10.1007/BF00755677>.

30. Garretson DJ. Psychological misdiagnosis of African Americans. *J Multicult Couns Dev*. 1993;21:119–26. <https://doi.org/10.1002/j.2161-1912.1993.tb00590.x>.
31. Barnes DM, Bates LM. Do racial patterns in psychological distress shed light on the Black-White depression paradox? A systematic review. *Soc Psychiatry Psychiatr Epidemiol*. 2017;52(8):913–28. <https://doi.org/10.1007/s00127-017-1394-9>.
32. Jackson JS, Knight KM, Rafferty JA. Race and unhealthy behaviors: chronic stress, the HPA axis, and physical and mental health disparities over the life course. *Am J Public Health*. 2010;100(5):933–9. <https://doi.org/10.2105/AJPH.2008.143446>.
33. Pamplin JR, Kezios KL, Hayes-Larson E, et al. Explaining the Black-white depression paradox: interrogating the Environmental Affordances Model. *Soc Sci Med*. 2021;277: 113869. <https://doi.org/10.1016/j.socscimed.2021.113869>.
34. Williams D, González H, Neighbors H, et al. Prevalence and distribution of major depressive disorder in African Americans, Caribbean blacks, and non-Hispanic whites: results from the National Survey of American Life. *Arch Gen Psychiatry*. 2007;64:305–15. <https://doi.org/10.1001/archpsyc.64.3.305>.
35. HCUP SEDD. Published 2019. Accessed July 24, 2020. https://www.hcup-us.ahrq.gov/db/state/sedddist/SEDD_Introduction.jsp
36. Singh P, Chakravarthy B, Yoon J, Snowden L, Bruckner TA. Psychiatric-related revisits to the emergency department following rapid expansion of community mental health services. *Acad Emerg Med*. Published online June 4, 2019. <https://doi.org/10.1111/acem.13812>
37. Bruckner TA, Singh P, Chakravarthy B, Snowden L, Yoon J. Psychiatric emergency department visits after regional expansion of community health centers. *Psychiatr Serv*. 2019;70(10):901–6. <https://doi.org/10.1176/appi.ps.201800553>.
38. Bruckner TA, Singh P, Yoon J, Chakravarthy B, Snowden LR. African American/white disparities in psychiatric emergencies among youth following rapid expansion of Federally Qualified Health Centers. *Health Serv Res*. 2020;55(1):26–34. <https://doi.org/10.1111/1475-6773.13237>.
39. County FIPS Codes | NRCS. Accessed July 20, 2021. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/home/?cid=nrcs143_013697
40. Publications, Reports - NYPD. Accessed December 15, 2020. <https://www1.nyc.gov/site/nypd/stats/reports-analysis/stopfrisk.page>
41. 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. *The Lancet*. 2018;392(10144):302–10. [https://doi.org/10.1016/S0140-6736\(18\)31130-9](https://doi.org/10.1016/S0140-6736(18)31130-9).
42. Das A, Singh P, Kulkarni AK, Bruckner TA. Emergency Department visits for depression following police killings of unarmed African Americans. *Soc Sci Med*. 2021;269: 113561. <https://doi.org/10.1016/j.socscimed.2020.113561>.
43. McCleary R, Hay R. *Applied time series analysis for the social sciences*. Thousand Oaks, CA: Sage Publications; 1980.
44. Catalano R, Serxner S. Time series designs of potential interest to epidemiologists. *Am J Epidemiol*. 1987;126(4):724–31.
45. Liu LM. *Scientific Computing Associates Corp*. Chicago, IL: Published online 2009.
46. Box G, Jenkins G, Reinsel G. *Time series analysis: forecasting and control*. 3rd ed. Englewood Cliff, NJ: Prentice Hall; 1994.
47. Trends in the utilization of emergency department services, 2009–2018. ASPE. Accessed October 28, 2022. <https://aspe.hhs.gov/reports/trends-utilization-emergency-department-services-2009-2018>
48. Fragile families and child wellbeing study. Accessed November 29, 2022. <https://fragilefamilies.princeton.edu/>
49. Monk EP. Linked fate and mental health among African Americans. *Soc Sci Med*. 2020;266: 113340. <https://doi.org/10.1016/j.socscimed.2020.113340>.
50. Harrell SP. A multidimensional conceptualization of racism-related stress: implications for the well-being of people of color. *Am J Orthopsychiatry*. 2000;70(1):42–57. <https://doi.org/10.1037/h0087722>.
51. Owens E, Rosenquist J. Racial and Identity Profiling act (RIPA) in the Los Angeles Police Department. Published online 2020. Accessed July 16, 2022. <https://escholarship.org/uc/item/4mn75943>
52. Theall KP, Francois S, Bell CN, Anderson A, Chae D, LaVeist TA. Neighborhood police encounters, health, and violence in a Southern City: study examines neighborhood police encounters, health, and violence in New Orleans, Louisiana. *Health Affairs*. 2022;41(2):228–36. <https://doi.org/10.1377/hlthaff.2021.01428>.
53. Farrell C. Policing gender, race, and place: a multi-level assessment of stop and frisks. *Race Justice*. Published online February 16, 2022:21533687221078970. <https://doi.org/10.1177/21533687221078970>
54. Crenshaw K. On intersectionality: essential writings. *Faculty Books*. Published online March 1, 2017. <https://scholarship.law.columbia.edu/books/255>
55. MacDonald J, Braga AA. Did Post-Floyd et al. Reforms reduce racial disparities in NYPD stop, question, and frisk practices? An exploratory analysis using external and internal benchmarks. *Justice Q*. 2019;36(5):954–983. <https://doi.org/10.1080/07418825.2018.1427278>
56. Black Lives Matter. Black Lives Matter. Published 2022. Accessed November 14, 2022. <https://blacklivesmatter.com/about/>
57. Ni MY, Kim Y, McDowell I, et al. Mental health during and after protests, riots and revolutions: a systematic review. *Aust N Z J Psychiatry*. 2020;54(3):232–43. <https://doi.org/10.1177/0004867419899165>.
58. Price JH, Khubchandani J. The changing characteristics of African-American adolescent suicides, 2001–2017. *J Community Health*. 2019;44(4):756–63. <https://doi.org/10.1007/s10900-019-00678-x>.
59. Taskforce on Black Youth Suicide and Mental Health | U.S. Representative Bonnie Watson Coleman. U.S.

- Congresswoman Bonnie Watson Coleman. Accessed May 7, 2021. <https://watsoncoleman.house.gov/suicidetas-kforce/>
60. Ring the Alarm: the Crisis of Black Youth Suicide in America | Suicide Prevention Resource Center. Accessed September 23, 2021. <https://www.sprc.org/news/ring-alarm-crisis-black-youth-suicide-america>
 61. Gili M, Castellví P, Vives M, et al. Mental disorders as risk factors for suicidal behavior in young people: a meta-analysis and systematic review of longitudinal studies. *J Affect Disord.* 2019;245:152–62. <https://doi.org/10.1016/j.jad.2018.10.115>.
 62. Duron JF, Williams-Butler A, Mattson P, Boxer P. Trauma exposure and mental health needs among adolescents involved with the juvenile justice system. *J Interpers Violence.* Published online May 26, 2021:08862605211016358. <https://doi.org/10.1177/08862605211016358>
 63. Shufelt JL, Coccozza JJ. *Youth with mental health disorders in the juvenile justice system: results from a multi-state prevalence study.* Delmar, NY: National Center for Mental Health and Juvenile Justice. 2006. <https://www.ojp.gov/ncjrs/virtual-library/abstracts/youth-mental-health-disorders-juvenile-justice-system-results-multi>. Accessed 27 Apr 2021.
 64. Mesic A, Franklin L, Cansever A, et al. The relationship between structural racism and Black-White disparities in fatal police shootings at the state level. *J Natl Med Assoc.* 2018;110(2):106–16. <https://doi.org/10.1016/j.jnma.2017.12.002>.
 65. Ross CT. A multi-level Bayesian analysis of racial bias in police shootings at the county-level in the United States, 2011–2014. Hills PJ, ed. *PLoS One.* 2015;10(11):e0141854. <https://doi.org/10.1371/journal.pone.0141854>

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