

Residential Segregation and Injection Drug Use Prevalence Among Black Adults in US Metropolitan Areas

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As recognized by the National Institutes of Health,¹ identifying the determinants of injection drug use among Black adults is important for public health, given the substantial and persistent overrepresentation of Black Americans among people diagnosed with injection-related health problems, including HIV/AIDS and fatal illicit drug overdoses.^{2–11} Structural factors, including racial residential segregation, have been hypothesized to be potent determinants of drug use patterns among Black individuals, and, in fact, some have suggested that such factors play a more important role in determining drug use among Blacks than among Whites.^{12–23}

Few studies, however, have pursued related lines of inquiry.^{18,23–25} This omission is striking when placed within the broader context of public health, a discipline that has increasingly emphasized the structural determinants of health and health-related behaviors.^{26–29} The microlevel focus of research on drug use patterns among Blacks is, however, consonant with the larger body of research into the etiology of licit and illicit drug use and dependence in the general population, a body of research that has tended to locate the causes of drug use and abuse within the individual, family, and peer group.¹⁷ This microlevel orientation is also evident in drug-related interventions: the 2 principal methods of addressing active drug use and addiction, drug treatment programs and, particularly for Black Americans, the criminal justice system, primarily target individuals.^{30–32}

Our analysis investigates the relations of 2 dimensions of racial residential segregation, namely, residential isolation and concentration, to the subsequent prevalence of injection drug use among Black adults residing within 93 large US metropolitan statistical areas (MSAs). Residential segregation has been found to adversely affect the physical and mental health status of Black populations across the life course.^{33–39} Although no

Objectives. We analyzed the relations of two 1990 dimensions of racial residential segregation (isolation and concentration) with 1998 injection drug use prevalence among Black adult residents of 93 large US metropolitan statistical areas (MSAs).

Methods. We estimated injection drug use prevalence among Black adults in each MSA by analyzing 3 databases documenting injection drug users' encounters with the health care system. Multiple linear regression methods were used to investigate the relationship of isolation and concentration to the natural logarithm of Black adult injection drug use prevalence, controlling for possible confounders.

Results. The median injection drug use prevalence was 1983 per 100 000 Black adults (interquartile range: 1422 to 2759 per 100 000). The median isolation index was 0.48 (range: 0.05 to 0.84): in half the MSAs studied, the average Black resident inhabited a census tract where 48% or more of the residents were Black. The multiple regression model indicates that an increase of 0.50 in the isolation index was associated with a 23% increase in injection drug use prevalence among Black adults. Concentration was unrelated to the outcome.

Conclusions. Residential isolation is positively related to Black injection drug use prevalence in MSAs. Research into the pathways linking isolation to injection drug use is needed. (*Am J Public Health.* 2007;97:344–352. doi:10.2105/AJPH.2005.074542)

research has yet investigated the association of segregation with injection drug use prevalence among Black adults, available studies allow us to trace a pathway linking these 2 phenomena.

Black residents of segregated communities are at elevated risk of depression, anxiety, and general psychological distress.^{40,41} These mental health outcomes, in turn, create vulnerability to both engaging in injection drug use and sniffing or snorting injectable drugs such as heroin and cocaine.^{42–49}

Research regarding the relation of structural factors to drug use in the general population also testifies to the relevance of structural determinants: rates of unemployment, poverty, arrest, and neighborhood disorder have been found to be associated with patterns of injection drug use and heroin and cocaine use in various geographically defined communities.^{50–55} Because segregation concentrates and amplifies material deprivation in Black communities,⁵⁶ this research collectively suggests that segregation may contribute to the prevalence of injection drug use in Black urban populations.

Our examination of the relation of each of 2 segregation dimensions to injection drug use prevalence among Black adults reflects emerging recognition in public health that residential segregation is a multidimensional construct. Until recently, public health research on segregation and health has almost exclusively conceptualized residential segregation as a unidimensional phenomenon consisting of unevenness (defined as the extent to which the racial composition of an MSA deviates from that of its constituent neighborhoods^{57,58}) and operationalized using the dissimilarity index.^{39,59–62} However, Massey and Denton's⁵⁷ 1988 factor analysis of 20 segregation measures found that segregation is instead a highly complex phenomenon consisting of multiple dimensions, including but not limited to unevenness, isolation, and concentration, each signaling a particular spatial configuration.

This complexity has historical roots: although the overarching origins of racial residential segregation lie largely in efforts to restore and maintain White supremacy in the wake of emancipation, its multidimensional

nature is in part a product of variations across geographic areas in the specific methods employed to perpetuate this supremacy.^{56,63–65} Acevedo-Garcia and others^{39,60–62} have thus recommended expanding inquiries into segregation and health beyond the current focus on unevenness to include these additional dimensions. The index of dissimilarity has itself been questioned because of concerns about its conceptual links to health and interpretability.^{39,60,62,66} The following paragraphs review the definitions of the 2 segregation dimensions studied here, namely residential isolation and concentration, and trace their possible relation to injection drug use.

Isolation refers to the extent of potential intraracial contact for a group in its residential area and thus, reflects a combination of the percentage of the overall population constituted by that group in an MSA and its distribution across the MSA's neighborhoods.^{57,58} Some have hypothesized that isolation is the segregation dimension that holds the most relevance for health, and higher Black isolation has been associated with poorer self-reported health and higher mortality and homicide rates among Black Americans.^{39,59,67}

MSAs with high levels of Black isolation were often produced through White violence and legal actions, including zoning laws and restrictive covenants, designed to exclude Black individuals and families from historically majority-White neighborhoods.^{56,68–71} Ongoing discrimination by the real estate and banking industries against Black individuals seeking to buy or lease homes outside majority-Black neighborhoods has perpetuated Black residential isolation.^{56,72}

Drawing on past research that indicates that isolated Black areas can suffer disproportionately high rates of unemployment, poverty, and violence,^{73,74} each of which has been linked to injection drug use or other of injectable drugs,^{50–55,75,76} we posited that MSAs with elevated Black isolation would have a relatively high prevalence of injection drug use among Black adults.

Concentration refers to “the relative amount of physical space occupied by a minority group in the urban environment.”^{57(p289)} As Black migration to cities increased between 1870 and 1970,^{56,65} Whites' refusal to permit Blacks to live outside strictly delineated areas

created highly concentrated Black neighborhoods as existing housing units were divided and subdivided to create new homes for the burgeoning Black population.^{56,69}

Midcentury urban renewal programs that relocated large numbers of Black households from “renewed” areas to majority-Black neighborhoods compounded this concentration.^{56,65} As has been suggested previously,^{24,77} we posited that the overcrowded conditions that can characterize concentrated Black areas would contribute to the prevalence of injection drug use, in part by creating intensely stressful living conditions.

Further, the urban renewal programs that produced some concentrated Black communities might have disrupted social networks and institutions, both in the renewed community and the new host community, for a prolonged period.⁷⁸ Such disruptions have been linked to increased injection drug use and injectable drug use.^{77,79–81}

METHODS

We tested the hypotheses that isolation and concentration would be positively related to Black injection drug use prevalence in a sample of 93 large US MSAs with the use of a lagged cross-sectional design, a design commonly used in comparative research in which predictor variables precede the outcome variable in time,^{82–84} thus allowing the statistical model to mirror the conceptual model's temporal sequence.

Defined by the US Census Bureau, MSAs are adjacent counties that include at least 1 central city home to 50 000 or more people that collectively form a single cohesive socioeconomic unit.^{85,86} To be included in our sample, MSAs had to have been home to at least 500 000 residents in 1993. Ninety-six MSAs met this criterion. Three MSAs, however, lacked sufficient data on injection drug use among Black adults and were dropped from the sample. The boundaries of 50 MSAs changed between 1990 and 1998⁸⁷; all measures were operationalized using 1998 boundaries.

Measures

Segregation. Massey and colleagues⁵⁸ have identified the isolation and relative

concentration indexes as valid measures of their respective constructs. The isolation index captures, for the average member of racial/ethnic group X in an MSA, the percentage of individuals sharing his or her residential census tract who are also in group X (Table 1).^{66,88,89}

The relative concentration index compares the surface area of census tracts occupied by 1 racial/ethnic group in an MSA to that occupied by another (Table 1).⁵⁷ As Massey and Denton⁹⁰ note, this area-based measure also reflects tract population density: because tract boundaries are partially determined by population size, tracts with a smaller surface area are usually more concentrated than larger tracts. Where MSA boundaries remained constant between 1990 and 1998, index values were obtained from the 1990 Census. Otherwise, we calculated values using 1990 US Census Summary Tape File 1 data.

Injection drug use prevalence among Black adults. It is difficult to estimate injection drug use prevalence in geographic areas because injection drug use is both illegal and heavily stigmatized.^{91–94} Our calculation method estimated the 1998 prevalence of injection drug use among Black adults in each of the 93 MSAs in a 4-stage process: (1) estimating the proportion of injection drug users in each MSA who are Black, (2) calculating the number of injection drug users, regardless of race, in each MSA, (3) calculating the prevalence of injection drug use among Black adults with project data produced in stages 1 and 2 combined with US Census data on the number of Black and White adults in each MSA in 1998, and (4) validating our injection drug use prevalence estimates. Project stages 1 and 2 have been described in detail elsewhere.^{14,95}

In stage 1, we calculated the proportion of injection drug users who were Black in 1998 in each of 3 databases that documented injection drug users' encounters with the health care system and then averaged these database-specific percentages to create a single estimate for each MSA.¹⁴ The 3 databases analyzed were the Substance Abuse and Mental Health Administration's (drug) Treatment Episode Data Set (TEDS) and the Centers for Disease Control and Prevention's HIV Counseling and Testing Database (CTS) and AIDS Public Information Database (APID) (Table 2).

TABLE 1—Construct Definitions, Operational Definitions, and Formulas for Calculating 2 Dimensions of Racial Residential Segregation in Metropolitan Statistical Areas (MSAs)

Construct and Construct Definition	Measure and Operational Definition	Measure Formula, Range, and Interpretation
<p><i>Isolation:</i> Extent of potential contact among members of a single racial/ethnic group within their residential area.</p>	<p><i>Isolation index:</i> For the average member of racial/ethnic group X in a MSA, the percentage of individuals sharing his or her residential census tract who are also in group X.</p>	<p>Formula: $\sum_{i=1}^N [x_i/X] [x_i/t_i]$</p> <p>where</p> <p>$x_i$ = no. of members of group X in census tract i X = no. of members of group X in the MSA t_i = total population of census tract i</p> <p>Range: proportion of population in group X – 1.0 <i>Interpretation:</i> A value of 1.0 indicates total isolation.</p>
<p>Concentration: “The relative amount of physical space occupied by a minority group in the urban [and suburban] environment”^{57(p289)}</p>	<p><i>Relative concentration index:</i> Ratio of urban and suburban space occupied by 1 racial/ethnic group relative to that occupied by another in a MSA.</p>	<p>$\frac{\{ [\sum_{i=1}^N (x_i a_i / X)] / [\sum_{i=1}^n (y_i a_i / Y)] - 1 \}}{\{ [\sum_{i=1}^{n_1} (t_i a_i / T_1)] / [\sum_{i=n_2}^n (t_i a_i / T_2)] - 1 \}}$</p> <p>where</p> <p>Census tracts are ordered from smallest to largest in surface area and</p> <p>a_i = area of census tract i n_1 = rank of tract where cumulative total population of tracts equals total minority population of MSA, summed from smallest tract up n_2 = rank of tract where cumulative population of tracts equals majority population total from largest tract down T_1 = total population of tracts from 1 to n_1 T_2 = total population of tracts from n_2 to n y_i = no. of members of group Y in census tract i Y = no. of members of group Y in MSA X, x_i and t_i as defined above</p> <p>Range: no lower bound to 1.0 <i>Interpretation:</i> A value of 1.0 indicates that X’s concentration exceeds Y’s concentration to greatest extent possible.</p>

Source. Massey D and Denton N.^{57,90}

Because the proportion of injection drug users who were Black in APID reflected racial patterns of both HIV seroprevalence and injection drug use, APID-based estimates were adjusted for the HIV seroprevalence among Black injection drug users in the MSA. We analyzed CTS, APID, and TEDS data because each database captures a slightly different segment of the underlying injecting population in each MSA. Collectively, they should represent the racial demographics of this underlying population better than any single database could alone.¹⁴

In stage 2, to calculate the number of injection drug users in each MSA, we first adjusted the 1998 National Household Survey on Drug Abuse estimate of the number of past-year injection drug users nationwide to account for underreporting of injection drug use and undercoverage of injection drug users.^{95–97} The adjusted nationwide figure was then apportioned to each of the 93 MSAs studied with the use of data on national and MSA-specific patterns of utilization of injection drug use-related services and past MSA-specific injection drug use estimates.⁹⁵

In stage 3, we calculated the number of Black injection drug users in each MSA by multiplying the proportion of injection drug users in the MSA who were Black (from stage 1) by the estimated number of past-year injection drug users in that MSA (from stage 2). We then calculated race-specific injection drug use prevalence estimates by dividing the number of Black injection drug users in each MSA by the total number of Black adults aged 19 through 65 years in that MSA in 1998, obtained from the US Census.

TABLE 2—Description of Databases Analyzed to Calculate the Prevalence of Injection Drug Use Among Black Adults in 93 Large US Metropolitan Statistical Areas, 1998

Database Characteristics	Treatment Episode Data Set (TEDS)	HIV Counseling and Testing Service	AIDS Public Information Database
Description	SAMHSA database recording admissions to public and private drug treatment facilities licensed by the state.	CDC database documenting HIV test incidents at 11 640 HIV counseling and testing sites. Participating sites include family planning and STD clinics, hospitals and private medical centers, drug treatment programs, correctional facilities, and freestanding counseling and testing clinics. ⁹⁸	CDC database describing newly diagnosed cases of AIDS.
Coverage	SAMHSA estimates that the 1997 TEDS database described 87% of all admissions to facilities participating in TEDS and 67% of admissions to all treatment programs nationwide. ⁹⁹	No coverage estimates are available.	85% of all AIDS cases are eventually reported in most areas. ¹⁰⁰

Note. CDC = Centers for Disease Control and Prevention; SAMHSA = Substance Abuse and Mental Health Services Administration.

In stage 4, we investigated our estimates' validity by correlating them with 2 theoretically related variables, the prevalence of heroin and cocaine overdose fatalities (calculated using the Centers for Disease Control and Prevention's Multiple Cause of Death database) and of injection-related AIDS among Black adults (calculated using the APID).

Because the prevalences of injection drug use, overdose mortality, and AIDS among Black adults were each highly correlated with the region of the country in which the MSA was located and the MSA population size and racial composition, we used partial correlation methods to validate our prevalence estimates that controlled for these factors. Recognizing possible circularities inherent in analyzing the relation between injection drug use prevalence (calculated with APID data) and the prevalence of injection drug use-related AIDS, we examined the relation between the prevalence of injection-related AIDS and injection drug use prevalence calculated both with and without APID data.

Potential confounders. Past literature suggests that MSA population size, racial/ethnic composition (percentage Black and percentage White), and geographic region might confound the relation between segregation and Black injection drug use prevalence.^{50,56} These variables were calculated using 1990 Census data.

Analysis

Multiple linear regression methods were used to test our hypotheses. We conducted extensive exploratory data analysis and regression diagnostics to ensure that the data met our model's assumptions, and to gain a comprehensive understanding of key variables' distributions and interrelations.^{101,102} Because the distributions of Black injection drug use prevalence and population size were skewed, they were transformed with a natural logarithmic function. Observations that had undue influence in the multiple regression analysis, assessed with the DFFITS (difference in fit, standardized) test, were reweighted.¹⁰¹

An examination of variance inflation factors in the multiple regression model indicated that the 2 segregation measures were not collinear and thus could be simultaneously included in the model.¹⁰¹ The percentage of MSA residents who were Black was, however, collinear with the isolation index (variation inflation factor=3.5) in this model, a relation rooted in the index's incorporation of MSA racial composition (Table 1).⁵⁷ The variable denoting the percentage of residents who were Black was therefore dropped from the main analysis to increase the point estimates' precision.¹⁰¹

To investigate the extent to which the observed relation between isolation and Black injection drug use prevalence was an artifact of MSA racial composition, we ran a second

regression model that incorporated the percentage Black and compared the magnitude of the relation of isolation to injection drug use prevalence across the 2 regression models.

RESULTS

Our injection drug use prevalence estimates indicate that in half the MSAs studied, there were 1983 injection drug users or more per 100 000 Black adults (Table 3). Injection drug use prevalence among Black adults ranged considerably (interquartile range=1422 to 2759 per 100 000). The validation analysis indicated that these injection drug use prevalence estimates were positively and significantly associated with the prevalences of overdose deaths ($R=0.31$; $P=.003$) and injection-related AIDS among Black adults ($R=0.49$; $P<.001$); the latter correlation persisted when injection drug use prevalence estimates were recalculated without APID data ($R=0.47$; $P<.0001$).

The median adult population size in the 93 MSAs studied was approximately 721 000, and the median percentage of the total MSA population who self-identified as Black was 9% (Table 3). As in other research on US MSAs,⁵⁶ values were high on both segregation measures. In 47 of the 93 MSAs studied, the isolation index indicated that the average Black adult or child lived in a census tract in which at least 48% of the tract population

TABLE 3—Sociodemographic Characteristics and Geographic Distribution in 1990 and Prevalence of Injection Drug Use Among Black Adults in 93 Large US Metropolitan Statistical Areas (MSAs) in 1998

MSA Characteristic	Statistic
Adult population size in 1990, median (range)	720 975 (256 123–5 684 204)
Racial/ethnic composition in 1990, median % (range)	
White, Non-Hispanic	79.00 (25.58–97.95)
Black, Non-Hispanic	9.28 (0.90–40.59)
US region, no.	
Northeast	24
South	21
Midwest	21
West	27
Isolation index in 1990, median (range)	0.48 (0.05–0.84)
Relative concentration index, 1990, median (range)	0.72 (–1.02–0.94)
Injection drug use prevalence (per 100 000) among Black adults aged 19–65 y in 1998, median (interquartile range)	1983.43 (1421.56–2758.59)

was Black (Table 3; note that this is lower than published values of the isolation index for 1990 calculated using 1990, rather than 1998, MSA boundaries⁵⁶). In 50% of the MSAs sampled, the relative concentration index was 0.72 or greater, exceeding the 0.60 cutoff point Massey and colleagues⁵⁸ used to identify high levels of segregation in this dimension.

Bivariate regression analyses indicated that the isolation index was not associated with the natural logarithm of injection drug use prevalence among Black adults (Table 4). However, once we controlled for MSA

sociodemographic characteristics and region, particularly the West, where isolation was low and Black injection drug use prevalence high, a positive relation between the isolation index and the natural logarithm of injection drug use prevalence among Black adults emerged (Table 4).

By exponentiating the regression equation, we find that an increase of 0.50 in the isolation index was associated with a 23% increase in the (unlogged) injection drug use prevalence among Black adults. Adding percentage Black to the model only slightly altered the magnitude of the relation between

isolation and the natural logarithm of injection drug use prevalence, from $b=0.41$ to $b=0.43$, suggesting that the relation between isolation and injection drug use prevalence was not an artifact of MSA racial composition. There was no relation between the relative concentration index and the logarithm of Black injection drug use prevalence in bivariate or multivariate analyses. The model accounted for 31% of the outcome's variation in these MSAs.

DISCUSSION

MSAs with higher levels of Black residential isolation in 1990 had a higher prevalence of injection drug use among Black adults in 1998 than other MSAs did. It is noteworthy, however, that concentration was not associated with injection drug use prevalence. These divergent relations testify to the distinct association each segregation dimension has with particular health outcomes and, more specifically, lend support to the proposition that residential isolation may be the segregation dimension that holds particular significance for health.^{39,59–62}

There are multiple pathways through which Black residential isolation could be linked to injection drug use prevalence among Black adults in MSAs. Unlike concentrated Black census tracts, which are primarily characterized by elevated poverty rates, isolated Black tracts tend to be associated with multiple indicators of social and material disadvantage, including poverty, unemployment, and violence.^{67,73,74} Each of these characteristics, alone or in combination, could create vulnerability to injection drug use.

Exposure to community violence creates a risk of illicit drug use (including heroin and cocaine use), perhaps because witnesses or victims of violence use drugs to manage subsequent depression, fear, and anxiety.⁷⁶ Likewise, poverty may promote the transition to (and continuation of) injecting among active drug users because injection drug use is a more efficient drug administration method than sniffing or snorting.⁴⁹ Moreover, evidence suggests that injectable drugs are more overtly available in disadvantaged neighborhoods than they are elsewhere.¹⁰³

TABLE 4—Bivariate and Multiple Linear Regression of 2 Segregation Dimensions on the Natural Logarithm of the Prevalence of Injection Drug Use Among Black Adults in 93 Large US Metropolitan Statistical Areas, 1998

Covariates	Unadjusted Coefficient (SE)	Adjusted Coefficient (SE)
Intercept	NA	3.72 (0.55)***
Natural logarithm of adult population size	0.08 (0.10)	–0.12 (0.09)
Population non-Hispanic White, %	–0.003 (0.002)	0.002 (0.002)
Region (reference category: Northeast)		
South	–0.35 (0.07)***	–0.33 (0.07)***
Midwest	–0.26 (0.07)**	–0.29 (0.07)***
West	0.03 (0.07)	0.15 (0.08)
Isolation index	–0.26 (0.15)	0.41 (0.20)*
Relative concentration index	0.05 (0.08)	0.07 (0.08)

* $P < .05$; ** $P < .01$; *** $P < .001$.

Another interpretation of our findings is also possible. Isolated Black census tracts may protect against injection drug use by creating a place where Black residents encounter on a daily basis organizations fostering a positive Black identity; endure little White-initiated interpersonal discrimination; and seek and offer solace and racial solidarity in the face of racial inequality and discrimination. The absence of these protections may create vulnerability to injection drug use among Black individuals living outside isolated Black census tracts,^{104–111} though this risk may be offset by the greater access these individuals tend to have to socioeconomic resources and a reduced exposure to violence.²⁴

Further research is needed to elucidate the pathways through which elevated isolation is associated with injection drug use prevalence and to determine, as we could not in this ecological study of MSAs, whether the relation is evident only among Black residents of isolated Black tracts, Black individuals residing outside such tracts, or both.

Two additional avenues of research are also possible. First, a positive relation between residential isolation and injection drug use prevalence may exist in other racial/ethnic groups. Puerto Ricans, who appear to have the highest prevalence of cocaine use of all Latino groups,¹¹² are also the sole racial/ethnic group experiencing a level of isolation that approaches that of Black Americans.⁵⁶ Research is needed to determine whether isolation promotes injection drug use among Puerto Ricans, and perhaps other racial/ethnic groups.

Our findings also suggest an additional line of inquiry: studying the extent to which Black isolation shapes the distribution of injection drug use-related health problems across Black urban populations by elevating the prevalence of injection drug use. This inquiry is particularly pressing given the high prevalence of overdose deaths and injection drug use-related AIDS borne by Black Americans.^{2–11} Collectively, the results of this research could help injection drug users and their allies identify communities in need of drug-related health services, including drug treatment and syringe exchange programs.

Our findings must be understood in the light of their limitations, which lie principally

in the study's ecological and cross-sectional design and measurement of injection drug use prevalence among Black adults. Because our unit of analysis was the MSA, we could not investigate the role of neighborhood- or individual-level factors, such as socioeconomic status, gender, and age, as confounders or modifiers of the relation between MSA-level residential isolation (or concentration) and Black injection drug use prevalence.^{27,29} Multilevel research into these possibilities should address these limitations. Additionally, although we used a lagged cross-sectional design in which predictors predated the outcome, the possibility of autocorrelation precludes assessing the causal direction of our findings.

Our service-based method of calculating injection drug use prevalence leaves room for an alternative interpretation of our findings: although it is possible that residential isolation produces a higher prevalence of injection drug use, it is also possible that isolation results in a higher prevalence of health problems among injection drug users and thus, greater use of drug-related services. Possibly countering this bias, however, is the fact that isolated Black areas of segregated MSAs tend to be medically underserved,¹¹³ and CTS and TEDS capture individuals accessing routine or nonemergency health services.

We place our findings in the context of past research regarding racial inequality, discrimination, and health. Our analysis suggests that injection drug use should be added to the growing list of the adverse health behaviors and outcomes among Black Americans that may be generated by racial inequality and discrimination.^{114,115}

Further and more specifically, this analysis also adds a new dimension to the body of research documenting the relation between inequitable and discriminatory racial relations and licit and illicit drug use and abuse. Investigators have concluded that Black adolescents and adults who report higher levels of interpersonal or everyday discrimination are more likely to report lifetime smoking, smoking more frequently, and engaging in problem drinking than other Black individuals.^{104–110} Likewise, Black adults reporting higher levels of internalized racism also report consuming

more alcohol than other Black adults.¹⁹ Our findings extend this body of research by concluding that structural, in addition to intrapsychic and interpersonal, manifestations of racial inequality and discrimination may adversely shape injection drug use rates among Black adults.

If substantiated by additional research, our finding that a structural factor is related to Black injection drug use prevalence may also bear consequences for US domestic drug policy. As noted earlier, the criminal justice system, which locates cause within the individual and calls it culpability, plays a major role in the US government's response to illicit drug use among Black Americans that dwarfs its role in addressing the drug use of White Americans.^{30–32} If, as our research suggests, the cause of injection drug use among Black adult urban residents lies partially in isolation, related prevention and intervention efforts may also benefit from altering social structures—and, more broadly, from eradicating racial inequality and discrimination in the United States—rather than from arresting and incarcerating large numbers of Black individuals. ■

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This article was accepted December 19, 2005.

Note. *The points of view, opinions, and conclusions in this article do not necessarily represent the official position of the US Government, the Medical and Health Research Association, or National Development and Research Institutes, Inc.*

Contributors

H.L.F. Cooper originated the study, created the prevalence estimates, conducted all analysis-testing hypotheses, and wrote the article. S.R. Friedman contributed substantially to the analyses, interpretation, and framing and created the original estimates. B. Tempalski and R. Friedman helped create and validate these estimates and contributed substantially to interpretations and framing.

Acknowledgments

While conducting this research, H.L.F. Cooper was supported by a Behavioral Science Training in Drug Abuse Research postdoctoral fellowship sponsored by the Mental and Health Research Association of New York City, Inc, and National Development and Research Institutes with funding from the National Institute on Drug Abuse (grant 5T32 DA07233). All other authors were supported by the National Institute on Drug Abuse (grant R01 DA13336, Community Vulnerability and Response to injection drug use-Related HIV).

The authors thank Greg Falkin and Holly Hagan for their invaluable comments on this article. We also thank the US Census Bureau for calculating the segregation indexes and making them publicly available.

Human Participant Protection

The human subjects committee of the National Development and Research Institutes, Inc. approved all analyses.

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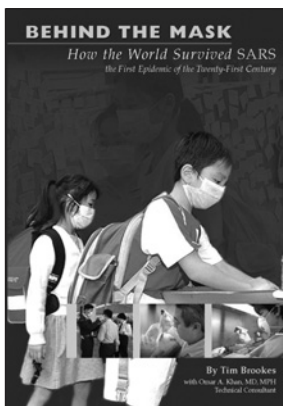
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