



## Research paper

# Racialized risk environments in a large sample of people who inject drugs in the United States



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## ABSTRACT

**Background:** Substantial racial/ethnic disparities exist in HIV infection among people who inject drugs (PWID) in many countries. To strengthen efforts to understand the causes of disparities in HIV-related outcomes and eliminate them, we expand the “Risk Environment Model” to encompass the construct “racialized risk environments,” and investigate whether PWID risk environments in the United States are racialized. Specifically, we investigate whether black and Latino PWID are more likely than white PWID to live in places that create vulnerability to adverse HIV-related outcomes.

**Methods:** As part of the Centers for Disease Control and Prevention’s National HIV Behavioral Surveillance, 9170 PWID were sampled from 19 metropolitan statistical areas (MSAs) in 2009. Self-reported data were used to ascertain PWID race/ethnicity. Using Census data and other administrative sources, we characterized features of PWID risk environments at four geographic scales (i.e., ZIP codes, counties, MSAs, and states). Means for each feature of the risk environment were computed for each racial/ethnic group of PWID, and were compared across racial/ethnic groups.

**Results:** Almost universally across measures, black PWID were more likely than white PWID to live in environments associated with vulnerability to adverse HIV-related outcomes. Compared to white PWID, black PWID lived in ZIP codes with higher poverty rates and worse spatial access to substance abuse treatment and in counties with higher violent crime rates. Black PWID were less likely to live in states with laws facilitating sterile syringe access (e.g., laws permitting over-the-counter syringe sales). Latino/white differences in risk environments emerged at the MSA level (e.g., Latino PWID lived in MSAs with higher drug-related arrest rates).

**Conclusion:** PWID risk environments in the US are racialized. Future research should explore the implications of this racialization for racial/ethnic disparities in HIV-related outcomes, using appropriate methods.

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## Introduction

A recent systematic review of international evidence found that HIV prevalence among people who inject drugs (PWID) is twice as

high among racial/ethnic minority PWID than among racial/ethnic majority PWID (Des Jarlais et al., 2012). Disparities in HIV prevalence among PWID are particularly stark in the United States (US), where HIV prevalence is six and eleven times higher among Latino and non-Hispanic black PWID, respectively, than among non-Hispanic white PWID (Centers for Disease Control & Prevention, 2006; Laffoon, Satcher Johnson, Cohen, Hu, & Shouse, 2011; Lansky et al., 2014). The broad ranges of these disparities reflect

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geographic variation in the distribution of HIV within and across racial/ethnic groups. These disparities have persisted since the early days of the epidemic in the US (Friedman, Quimby, Sufian, Abdul-Quader, & Des Jarlais, 1997; Kottiri, Friedman, Neaigus, Curtis, & Des Jarlais, 2002). Racial/ethnic differences in risk behaviors do not explain them: Latino and non-Hispanic black PWID are as likely or often less likely to report injection-related and sexual risk behaviors than non-Hispanic white PWID (Centers for Disease Control and Prevention, 2012a, 2012b, 2012c; Cooper et al., 2011; Friedman et al., 1993; Linton, Celentano, Kirk, & Mehta, 2013; Williams et al., 2013). Racial/ethnic disparities also exist in the progression of HIV infection among HIV-positive PWID in the US (Grigoryan, Hall, Durant, & Wei, 2009). Accordingly, the US Centers for Disease Control and Prevention (CDC), the White House, the Department of Health and Human Services, and investigators have called for research and interventions into the ways in which social factors, including characteristics of the places people live, create and perpetuate these disparities (Centers for Disease Control & Prevention, 2011; Centers for Disease Control and Prevention, 2012a, 2012b, 2012c; Friedman, Cooper & Osborne, 2009; National Institute on Drug Abuse of the National Institutes of Health, 2009; National Minority AIDS Council, 2006; Office of Disease Prevention and Health Promotion in the U.S. Department of Health and Human Services, 2012; The White House Office of National AIDS Policy, 2010).

The Risk Environment Model is a powerful theoretical framework to guide studies of the social determinants of HIV-related outcomes among PWID; a particular strength is its focus on how characteristics of the places where PWID live, work, and engage in drug-related activities shape vulnerability (Rhodes, 2002, 2009; Rhodes et al., 2003; Rhodes, Singer, Bourgois, Friedman, & Strathdee, 2005; Strathdee et al., 2010). The Risk Environment Model has, however, been underutilized in studies of racial/ethnic disparities in HIV-related outcomes among PWID. This paper develops the concept of “racialized risk environments” and empirically investigates the extent to which PWID who are Latino, non-Hispanic black, and non-Hispanic white (hereafter referred to as black and white, respectively) live in different geographically-defined risk environments in the US. Fundamentally at issue in this analysis is whether black and Latino PWID live in riskier environments than white PWID.

#### *Risk Environment Model*

The Risk Environment Model foregrounds the social situations, structures, and places that generate vulnerability to HIV transmission and other drug- and HIV-related harms among PWID (Rhodes, 2002, 2009; Rhodes et al., 2003, 2005; Strathdee et al., 2010). The “risk environment” is defined as the “space...[where] factors exogenous to the individual interact to increase the chances of HIV transmission” (Rhodes et al., 2005, p. 1026) and other drug- and HIV-related harms, including HIV-related morbidity and mortality (Milloy et al., 2012). This environment consists of four types of influence: influences that are social, economic, political, or physical (Rhodes, 2002; Rhodes et al., 2005). Some of these influences may be features of places (e.g., neighborhood poverty rates), while others may not be rooted in place (e.g., risk networks, interpersonal discrimination).

The model posits that each type of influence operates at multiple, intersecting levels to affect individual vulnerability (Rhodes, 2002, 2009; Rhodes et al., 2003, 2005; Strathdee et al., 2010).

A large body of evidence testifies to the explanatory power of the Risk Environment Model (Rhodes et al., 2005; Degenhardt et al., 2010; Strathdee et al., 2010). Studies have used it to identify policies and other contextual factors that seem to influence HIV acquisition and disease progression among PWID (Strathdee et al.,

2010; Milloy et al., 2012); to describe vulnerability to HIV among non-injection drug users (Goldenberg et al., 2011); and to inform mathematical models that explore the relationships between environmental factors and HIV (Strathdee et al., 2010). This model has rarely, however, been applied to study racial/ethnic disparities in HIV-related outcomes among PWID.

#### *Racialized risk environments*

To advance research and interventions into disparities in HIV-related outcomes among PWID, we have previously proposed that place-based features of risk environments may be “racialized” in the US (Cooper, Bossak, Tempalski, Friedman, & Des Jarlais, 2009). A risk environment is racialized when racial/ethnic groups of PWID inhabit places that differ systematically in the availability of protective features (e.g., substance abuse treatment programs) and in the presence of harmful features (e.g., police drug crackdowns). In addition to being rooted in the Risk Environment Model, the construct “racialized risk environments” has origins in Critical Race Theory (Bonilla-Silva, 2001). Central to Critical Race Theory is the concept of *racialized social systems* in which

“... economic, political, social, and ideological [hierarchies] are partially structured by the placement of actors in racial categories... The race placed in the superior position tends to receive greater economic remuneration and access to better occupations and prospects in the labor market, occupies a primary position in the political system, is granted higher social estimation..., often has the license to draw physical (segregation) as well as social (racial etiquette) boundaries... and receives what W.E.B. DuBois called a ‘psychological wage.’” (Bonilla-Silva, 2001, p. 37).

In the US, racialized social systems can manifest geographically. Within metropolitan areas, racial/ethnic residential segregation sorts members of different racial/ethnic groups into neighborhoods that are both separate and unequal (Logan & Stults, 2011; Massey and Denton, 1989, 1993). In US metropolitan areas in 2010, the average black resident lived in a census tract in which 45% of the other residents were black, 35% were white, and 15% were Latino (Logan & Stults, 2011). A parallel pattern existed for Latinos (Logan & Stults, 2011). The average white resident lived in a tract where 75% of the other residents were white and just 8% were black and 11% were Latino (Logan & Stults, 2011). Within segregated metropolitan areas, predominately black neighborhoods (often measured as census tracts) tend to have fewer social, economic, political, and physical resources and more hazards than predominately white neighborhoods; the same is true for predominately Latino neighborhoods, though perhaps to a lesser extent (Massey and Denton, 1989, 1993). For example, in urban areas predominately black neighborhoods tend to have higher densities of abandoned buildings, worse municipal services, and poorer housing quality than predominately white neighborhoods (Williams & Collins, 2001).

Members of different racial/ethnic groups may also experience different living environments in larger geographic areas (e.g., counties, municipalities, metropolitan areas). To illustrate, municipalities with higher proportions of black residents invest less in parks (Joassart-Marcelli, 2010).

Racial/ethnic differences in features of the environments where people live are associated with disparities in several health outcomes in the general population (Bleich, Thorpe, Sharif-Harris, Fesahazion, & Laveist, 2010; Do et al., 2008; Laveist, Pollack, Thorpe, Fesahazion, & Gaskin, 2011). For example, an analysis of the US National Health Interview Survey data found that differences in neighborhood context explained 38%–76% (depending on the age group) of the black/white disparity in self-rated

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