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A spatial analysis of community disadvantage and access to healthcare services in the U.S.

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ABSTRACT

Ongoing socioeconomic and racial and ethnic gaps in access to healthcare make it vital to examine the relationship between characteristics of communities and their impact on the availability of healthcare services. This study investigates how community-based resource constraints influence the provision of healthcare services in the United States. Drawing on several theoretical frameworks including research in the spatial distribution of healthcare, we compile data on 3141 U.S. counties in order to investigate the argument that gaps in the provision of substance abuse treatment are a function of resource constraints experienced by disadvantaged communities. Our principal aim is to demonstrate that socioeconomic privation, racial and ethnic isolation and limited healthcare infrastructure constrain the provision of substance abuse treatment services. Since prior research shows spatial clustering of socioeconomic privation, racial and ethnic isolation, and healthcare resources, we explicitly model the spatial dimensions of community-based resource disadvantage. Central findings support our chief expectations: counties with greater socioeconomic privation and diminished healthcare infrastructure experienced limited access to substance abuse treatment. Moreover, treatment clusters themselves were significantly related to socioeconomic privation and diminished healthcare infrastructure. Counties with a higher proportion of racial and ethnic minority members, however, did not experience less access to substance abuse treatment, with one exception, although post hoc analyses showed poverty had a moderating effect on race and ethnicity. Study limitations and implications for the organization of treatment resources are discussed.

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Introduction

Studies of healthcare service delivery emphasize persistent inequalities in access to healthcare services for disadvantaged groups. Individuals from disadvantaged socioeconomic backgrounds, and racial and ethnic minorities fall well below the general population in the care they receive (Chandra & Skinner, 2004; Kaiser Family Foundation, 2003; Kirby & Kaneda, 2005; Robert & House, 1994, 2000; Smedley, Stith, & Nelson, 2003). The U.S. Agency for Health Research and Quality's National Healthcare Disparities and Quality Reports, 2010 (hereafter – NHDR, 2010) argue that despite overtime improvement in some important areas, individuals from disadvantaged socioeconomic backgrounds and racial and ethnic minorities with varying backgrounds are more likely to report unmet healthcare needs and less likely to have a consistent source of healthcare. They are also less likely to receive routine care, or benefit from insurance coverage (Sampselle, 2007).

Research in mental health and substance abuse services uncovers similar inequalities. The authors of the U.S. Substance Abuse and Mental Health Services Administration's National Survey of Drug Use and Health (hereafter – NSDUH, 2011) argue that there is a substantial unmet need for substance use treatment among individuals living in poverty. For African Americans and Hispanics, greater perceived need and less access to care for mental health and drug and alcohol problems is common (Wells, Klap, Koike, & Sherbourne, 2001). Importantly, racial and ethnic minorities encounter more negative consequences related to their substance use such as increased mortality and morbidity (Caetano, 2003; Hannon & Cuddy, 2006) and, therefore, have more extensive treatment needs, for which they receive fewer services (Schmidt, Greenfield, & Mulia, 2006). Even in managed care programs, access and utilization of treatment services remain lower for racial and ethnic minority clients than for others (Daley, 2005).

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Complex reimbursement patterns, constraints on physician resources and geographic accessibility pose serious barriers to care for the poor, racial and ethnic minorities, and other disadvantaged groups. There are several ways of conceptualizing barriers to healthcare access (see Higgs, 2004 for review). At the individual-level acquiring care is based on individuals' ability to pay for it, directly or with insurance, and access is limited to those who can do so (Alliance for Health Reform, 2003). Community-level sources of care determine access as well (Hass et al., 2004; Litaker, Koroukian, & Love, 2005). Access is as much a matter of available services in the community, as it is an individual's ability to pay for those services (Gulliford et al., 2002; Lin, Crawford, & Salmon, 2005; Mooney, 1983). What factors inhibit accessibility? A number of studies have found that community context such as socioeconomic disadvantage, racial and ethnic isolation and residential instability act as barriers to healthcare provision (Kirby, 2008; Kirby & Kaneda, 2005; Small, 2006; Small, Jacobs, & Massengill, 2008).

To date, however, little healthcare services research examines how community context limits substance abuse treatment access (except Lo & Cheng, 2011; McAuliffe & Dunn, 2004; McAuliffe, Woodward, Zhang, & Dunn, 2002; Silver, Mulvey, & Swanson, 2002), focusing instead on either individual characteristics—correlates of clients' ability to pay for treatment—or program attributes and practices (e.g., Chuang, Wells, & Alexander, 2011; Edwards, Knight, & Flynn, 2011; Freidmann, Lemon, Stein, & D'Aunno, 2003; Jones, Heflinger, & Saunders, 2007; Weisner & McClellan, 2004). This is unfortunate because the impact of community context on availability of services is a key factor in the persistence of health inequalities (Davidson, Mitchell, & Hunt, 2008).

In an effort to fill this gap, our study investigates how community disadvantage influences substance abuse treatment access across United States counties. We argue that the structural characteristics of local environments—socioeconomic privation, racial and ethnic isolation, and limited healthcare infrastructure—are linked to the provision of healthcare, in this case, substance abuse treatment, because community healthcare agencies like other local organizations are dependent on their environment for resources. Several research streams help us understand how resources are unequally distributed across communities, how the unequal distribution of resources tends to cluster spatially, and how these resource inequalities act as barriers to substance abuse treatment.

The neighborhood-effects and social–ecological literatures demonstrate that socioeconomic disadvantage in the form of poverty, and sustained by racial and ethnic segregation isolates communities and depletes them of resources necessary to support local institutions such as businesses, schools, and social and healthcare services (Massey, White, & Phua, 1996; Sampson, Morenoff, & Gannon-Rowley, 2002; Wilson, 1987). Economic development and a vibrant civic life (including political beneficence), on the other hand, attract businesses, healthcare agencies and other organizations to a community (Arthur, 1994; Britton & Ocasio, 2007; Greve, 2002; Grønbjerg & Paarlberg, 2001; Peck, 2008). Moreover, isolated communities experience greater socioeconomic disorganization, characterized by fewer and fewer labor market opportunities, higher crime rates, declining schools and limited material and political resources (Wilson, 1987, 1996). Property values and business investment may be jeopardized by, for example, increasing criminality exacerbated by poverty and segregation (Hipp, Tita, & Greenbaum, 2009). Social disorganization also generates lack of trust in others (Ross, Mirowsky, & Pribesh, 2001) and a reduction of ties among community members which limits participation in local organizations and furthers residents' isolation (Sampson & Groves, 1989). The result is a weakening of a community's capacity to maintain its local institutions (Browning & Cagney, 2002).

In addition, poverty and racial and ethnic segregation in the U.S. show a distinct pattern of spatial clustering (Friedman & Lichter, 1998; Massey & Denton, 1998; Rupasingha & Goetz, 2007; Voss, Long, Hammer, & Friedman, 2006), as does the healthcare infrastructure (see e.g., the Dartmouth Atlas of Health Care, 2009). Where these forces meet yields a pattern of resource inequalities, which parallel diminished healthcare service provision.

We extend these arguments to investigate how weakened community capacity impacts availability of drug and alcohol treatment. The aim of our study is to demonstrate the influence of community resource disadvantage on the delivery of healthcare based on analyses of the local context of substance abuse treatment in the U.S. In general, substance abuse treatment is similar to other kinds of healthcare services in that the industry relies heavily on market mechanisms (i.e., utilization patterns) for service coordination, planning and evaluation (Rohrer & Westerman, 1998). It differs in that there is no national regulatory system and, in fact, little coordination, planning and evaluation. Treatment in the U.S. is thus an entrepreneurial activity resulting in a patchwork of facilities and services driven by socioeconomic mechanisms.

To understand these dynamics, we first examine the degree to which the spatial distribution of substance abuse treatment across 3141 U.S. counties is correlated with the spatial distribution of county socioeconomic privation, racial and ethnic isolation and limited healthcare infrastructure. To do so, we employ multivariate analyses of Local Spatial Autocorrelation (LISA), which depict the clustering of treatment and community-based resources. Second, we use spatial regression to investigate how these community-based resource constraints impact healthcare delivery. Based on prior studies, we argue that resource disadvantage will negatively influence access to treatment services because places with fewer resources (and their neighbors) will be less likely to sustain substance abuse treatment agencies in the local environment.

Background

Community resources and the provision of healthcare services

The neighborhood-effects and social–ecological literatures show persistent inequality between communities based on residential isolation. Evidence abounds that places characterized by geographic segregation of the poor and racial and ethnic minorities, especially African Americans, are handicapped by a variety of social problems such as higher than average infant mortality, poor prenatal care, crime, social and physical disorder, poor school achievement and violence (Sampson et al., 2002; Wilson, 1987). Residential segregation of the poor and racial and ethnic minorities is a robust phenomenon that has a powerful impact on health and healthcare (see e.g., Gaskin, Dinwiddie, Chan, & McCleary, 2012; Smedley et al., 2003). Social and physical isolation affects health by impacting the causes that increase mortality and morbidity (Kirby & Kaneda, 2005; Massey & Denton, 1998; Williams & Collins, 2001). These include the corrosive effects poverty and racial discrimination have on local institutions such as social and healthcare services that support health (Raphael, 2000). It is not simply the effects of individual resources linked to socioeconomic status or racial and ethnic identity of community members that constrains accessibility, rather, systemic features of local environments, based largely on community poverty and geographic segregation, have a significant impact.

Gaskin et al. (2012), for instance, show that disparities in healthcare access and use—healthcare provider visits—while associated with individual racial and ethnic identity are significantly related to the racial and ethnic structure of the community, independent of individual identity. Importantly, although less

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