Social Science & Medicine 187 (2017) 85–92

Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Black-white metropolitan segregation and self-rated health: Investigating the role of neighborhood poverty

D. Phuong Do [a, *], Reanne Frank [b], John Iceland [c]

[a] Zilber School of Public Health, University of Wisconsin-Milwaukee, Milwaukee, WI, United States
[b] Department of Sociology, The Ohio State University, Columbus, OH, United States
[c] Department of Sociology and Criminology, Pennsylvania State University, State Park, Pennsylvania, United States

ARTICLE INFO

Article history:
Received 23 February 2017
Received in revised form
13 May 2017
Accepted 10 June 2017
Available online 10 June 2017

Keywords:
Racial segregation
Health disparities
Neighborhood effects

ABSTRACT

While black-white segregation has been consistently linked to detrimental health outcomes for blacks, whether segregation is necessarily a zero-sum arrangement in which some groups accrue health advantages at the expense of other groups and whether metropolitan segregation impacts the health of racial groups uniformly within the metropolitan area, remains unclear. Using nationally representative data from the 2008–2013 National Health Interview Survey linked to Census data, we investigate whether the association between metropolitan segregation and health is invariant within the metropolitan area or whether it is modified by neighborhood poverty for black and white Americans. In doing so, we assess the extent to which segregation involves direct health tradeoffs between blacks and whites. We conduct race-stratified multinomial and logistic regression models to assess the relationship between 1) segregation and level of neighborhood poverty and 2) segregation, neighborhood poverty, and poor health, respectively. We find that, for blacks, segregation was associated with a higher likelihood of residing in high poverty neighborhoods, net of individual-level socioeconomic characteristics. Segregation was positively associated with poor health for blacks in high poverty neighborhoods, but not for those in lower poverty neighborhoods. Hence, the self-rated health of blacks clearly suffers as a result of black-white segregation – both directly, and indirectly through exposure to high poverty neighborhoods. We do not find consistent evidence for a direct relationship between segregation and poor health for whites. However, we find some suggestive evidence that segregation may indirectly benefit whites through decreasing their exposure to high poverty environments. These findings underscore the critical role of concentrated disadvantage in the complex interconnection between metropolitan segregation and health. Weakening the link between racial segregation and concentrated poverty via local policy and planning has the potential for broad population-based health improvements and significant reductions in black-white health disparities.

1. Introduction

By mid-century, non-Hispanic whites are projected to constitute less than 50 percent of the total U.S. population (Colby and Ortman, 2015). The likelihood of a "majority minority" country in roughly the next 25 years has fueled fears on behalf of many whites of potential losses due to their decreasing status as the majority group (Craig and Richeson, 2014). Historically and in the present, racial residential segregation - the spatial separation of racial groups across different neighborhoods - has been one way that whites have isolated themselves from minority groups.

In the United States, racial segregation is highest between black and white Americans (Massey and Tannen, 2015; Massey and Denton, 1988). In 2010, fully one-half of black metropolitan residents lived in metros with high levels of segregation or in hypersegregated metropolitan areas (Massey and Tannen, 2015). Hence, although metropolitan residential racial segregation between blacks and whites has gradually been declining over time, levels of black-white segregation continue to be high in absolute terms and in comparison to the levels between other racial/ethnic groups (Logan, 2013).

In contrast to other racial/ethnic minority groups (e.g., Asians

* Corresponding author. Zilber School of Public Health, University of Wisconsin-Milwaukee, 1240 N 10th St, Milwaukee, WI 53205, United States.
E-mail address: dphuong@uwm.edu (D.P. Do).

http://dx.doi.org/10.1016/j.socscimed.2017.06.010
0277-9536/

and, to a lesser extent, Hispanics) who are thought to follow a spatial assimilation model of residential attainment that translates socioeconomic gains into improved residential outcomes, the experience of black Americans is often described using the place stratification model of residential attainment (Iceland, 2009). Developed as a framework to better understand the significant barriers facing black Americans' residential choices, the place stratification model of residential attainment draws attention to the ways in which black Americans face unique hurdles in housing markets due to institutionalized discrimination (Logan and Alba, 1993; Logan and Molotch, 1987). Empirical evidence in support of the place stratification model in the case of black Americans is extensive and emphasizes the unique disadvantages faced by blacks vis a vis whites and other racial/ethnic minority groups in the residential attainment process (Alba and Logan, 1993; Logan and Alba, 1993; Massey and Tannen, 2015; Pais et al., 2012).

The detrimental impacts of segregation on black well-being have been demonstrated for various outcomes, including education, employment, and multiple measures of health (Collins and Williams, 1999; Cutler and Glaeser, 1997; Mouw, 2000). However, the association between segregation and white well-being has received less attention. Even when the associations between segregation and health for whites are explicitly mentioned, the results are often not presented or extensively discussed, with the emphasis almost always on the impact on minority populations (e.g., Kramer et al., 2010). Hence, the possibility of differential effects of segregation by race has been under-represented in the theoretical framing and discussion of the existing literature. One possibility is that because of finite resources, segregation is a zero-sum arrangement in which some groups accrue advantages with subsequent commensurate disadvantage imposed on others groups (Quillian, 2014). While evidence that whites may accrue health benefits from segregation is scarce, the question of whether segregation is necessarily a zero-sum game in which some groups gain at the expense of others has not been fully investigated. Understanding whether metropolitan segregation perpetuates the racial health gap by enhancing the health of whites as it undermines the health of blacks has clear implications for population health equity strategies. This is especially salient in light of the recent emergence of political and social headwinds countering attempts to enact policies aimed at addressing historical discrimination and reducing segregation (Carson, 2015; Semuels, 2016).

An additional, no less salient, gap in our understanding of the segregation-health relationship is whether the impact of metropolitan segregation varies, not only across racial groups, but also across different local neighborhood contexts. This omission is somewhat surprising. The key mechanism by which racial residential segregation is hypothesized to undermine health and well-being is in the way it concentrates poverty at the local level (Massey, 2016). While a few studies of metropolitan segregation and health have assessed the mediating role of poverty (e.g., Britton and Shin, 2013; Kershaw et al., 2013, Kershaw et al., 2011), to our knowledge, none have empirically evaluated its potentially moderating role. Extant studies have only estimated metropolitan-level average associations, neglecting the possibility of heterogeneity in the influence of segregation across different types of neighborhoods within the metropolitan area. Because metropolitan segregation reflects a state in which groups are sorted into different neighborhoods, the consequences of segregation may be deleterious, null, or even beneficial, depending on the more local neighborhood poverty concentration. For example, segregation may be deleterious to health for those who live in high poverty environments but may be salutary for those who live in more affluent neighborhoods. Hence, the effect of segregation on health may diverge in opposing directions depending on neighborhood conditions, specifically according to neighborhood poverty level.

In response to these gaps, we use nationally representative data from the National Health Interview Survey to assess 1) whether the association between metropolitan segregation and health is modified by neighborhood poverty and 2) whether segregation creates winners and losers in the domain of health for black and white Americans and, if so, who comes out ahead and who behind.

2. Metropolitan segregation and health

The first generation of metropolitan-level segregation studies consisted of ecological analyses and generally focused on mortality (Collins and Williams, 1999; LaVeist, 1989; Polednak, 1996). As early as 1950, Yankauer documented that black and white infant mortality rates were higher in the more segregated neighborhoods of New York City (Yankauer, 1950). Over half a century later, a second generation of studies emerged that used individual-level data to establish more robust connections between individual health and segregation (Kramer and Hogue, 2009; Yang et al., 2017). Many of these studies focused primarily on "neighborhood effects," and used measures of neighborhood racial concentration (e.g., % black in the local area (e.g., neighborhoods)) as crude proxies for segregation (e.g., Jackson, et al., 2000; LeClere et al., 1997; Mason et al., 2009; Rodriguez et al., 2007). Local level measures of racial concentration, however, ignore the relative population size of racial groups and how they are distributed within a broader area (Osypuk and Acevedo-Garcia, 2010). Thus, they fail to capture the extent to which different racial/ethnic groups are nonrandomly separated from each other. The sorting feature of segregation is only captured by measures that account for the racial characteristics of the broader area, e.g., the entire metropolitan area over which the housing and labor markets operate. In contrast to local level measures of racial concentration, measures of metropolitan segregation not only capture the relative distributions of racial/ethnic groups, they also allow for an assessment of the effects of segregated space beyond the area where an individual lives (Quillian, 2014).

A smaller number of studies have more properly operationalized racial residential segregation using metropolitan-level measures that assess the distribution of racial groups across neighborhoods within a metropolitan area. The general pattern in the metropolitan-level segregation studies points to negative health impacts for blacks (Kramer and Hogue, 2009). At the national level, metropolitan-level segregation has been associated with worse health for black Americans in studies examining birthweight, prematurity, hypertension, obesity, self rated-health and risky sexual behaviors, among others (e.g., Austin, et al., 2016; Bower et al., 2015; Britton and Shin, 2013; Jones et al., 2014; Kershaw et al., 2013; Kramer et al., 2010; Lutfi et al., 2015; Osypuk and Acevedo-Garcia, 2008; Subramanian et al., 2005). Exceptions to the pattern have been found. For example, results from one study revealed that, after accounting for levels of black isolation in a metropolitan area, blacks had more optimal birth outcomes in metros in which black neighborhoods are more likely to be contiguous, i.e., higher levels of clustering (Bell et al., 2006).

Less is known about the connection between black-white metropolitan-level segregation and health outcomes for whites with the majority of studies utilizing ecological analyses (e.g., Bird, 1995; Kramer and Hogue, 2008; Polednak, 1996). Among the smaller number of studies that explicitly assessed the effect of metropolitan-level segregation on individual-level health outcomes of white Americans, the results have been inconsistent (Kramer and Hogue, 2009). Higher levels of metropolitan-level segregation have been found to be associated with lower levels of hypertension and obesity risk for whites (Bower et al., 2015; Kershaw et al., 2011), but in the cases of self-rated health, body