

The Ties That Bind: Racial/Ethnic Segregation, Neighborhood Poverty, and Health

INTRODUCTION

Racial/ethnic residential segregation in the U.S. geographically concentrates hazards, as well as resources, in such a way that racial/ethnic minorities bear the brunt of neighborhood disadvantage. Absolute levels of segregation remain stubbornly high; in 2010, whites resided in neighborhoods that were on average 75% White while Blacks and Hispanics resided in neighborhoods that were predominantly co-racial/ethnic and only 35% white (Logan & Stults, 2011). Segregation is implicated as a root cause of racial/ethnic health disparities because it impacts a wide range of health outcomes through multiple pathways, including employment, education, income, and importantly, neighborhood conditions – the primary means through which residential segregation is theorized to affect health.

Yet, how neighborhood conditions interconnect with metropolitan segregation to affect population health is not well understood. The extant evidence demonstrates (separately) that segregation increases the levels of poverty in minority communities, neighborhood disadvantage is associated with poorer health, and metropolitan segregation is associated with poorer health outcomes for Blacks and is ambiguous for Whites and Hispanics (Williams & Collins, 2001; Acevedo-Garcia, 2000; Subramanian, Acevedo-Garcia, & Osypuk 2005; Lee & Ferraro 2007; Osypuk, Bates, & Acevedo-Garcia 2010). Hence, postulations of neighborhoods' role in perpetuating health disparities are based on extrapolations from studies that examine only components (i.e., metropolitan segregation-health or neighborhood-health) of a more complex multi-level relationship. We have yet to assess all three components – metropolitan segregation, neighborhood disadvantage, and individual health – and their connections simultaneously.

Current studies implicitly assume that metropolitan-level segregation affects those in poor and non-poor neighborhoods equally. Hence, we do not know whether metropolitan segregation leads to detrimental health exclusively in disadvantaged neighborhoods, whether its effects on minority health crosses neighborhood boundaries, or whether segregation impacts Blacks, Hispanics, and Whites within the same local context equally. It is possible that the macro forces leading to segregation increase racial/ethnic tensions and lowers social capital throughout the city, leading to negative consequences for all minorities regardless of more

localized context. Yet, because segregation creates a spatial divide between the affluent and the poor, an individual may experience salutary effects of segregation if he/she resides in an affluent neighborhood with many amenities and services, while another may incur detrimental effects if he/she resides in a poor neighborhood that lacks those advantages. Consequently, segregation's effects on health - either broadly to a metropolitan area or specifically to racial/ethnic minorities and/or the impoverished - have yet to be determined.

In response to this void in the literature, this study uses three levels of data (individual, neighborhood, and metropolitan) to examine the links among metropolitan segregation, neighborhood context, and health on a national scale for Blacks, Hispanics, and Whites.

Data

I use data from the 2006-2013 nationally representative National Health Interview Survey (NHIS) with individual-level data linked to census tract and metropolitan characteristics. Geocode identifiers are not publicly available and were obtained through special contract with the NCHS Research Data Center.

The analytical sample is restricted to respondents who are non-Hispanic Black or White and Hispanics age 18 and over with valid tract identifiers. Over 98% of the NHIS sample was linked to valid tract identifiers. The resulting sample consists of over 280,000 White, 70,000 Blacks, and 100,000 Hispanic individuals.

The health outcomes of interest are obesity and self-rated health.

The main neighborhood context of interest is neighborhood poverty, defined as the proportion of residents below the federal poverty level in a neighborhood. Census tracts are used as proxies for neighborhoods and are derived from the 2000 and 2010 Census, and 2007-2011 American Community Surveys (ACS) where necessary. Tract-level measures in years when Census data were not collected were derived from linear interpolation. All neighborhood boundaries are based on 2000 tract boundary demarcation.

Metropolitan segregation measures include the dissimilarity index, the isolation index, and the clustering index. The dissimilarity index, the most commonly used measure of segregation, represents the level of evenness in the distribution of proportions of minorities across neighborhoods within a metropolitan. The isolation index reflects the extent to which minorities are exposed each other. The clustering index, less used in the segregation studies, measures the extent to which minorities are grouped into contiguous neighborhoods.

Individual-level covariates include race/ethnicity, nativity, age, income, marital status, education level, labor force status. Metropolitan level controls include total population, % of civilian labor force in manufacturing and government, % of total labor force in the military, % of the population aged 65 and older, % of housing units that were built in the last 10 years, and % of the population that resides in the suburbs; all of these variables have been found to be correlated to segregation

Analytical Strategy

To investigate the relationship between metropolitan segregation, neighborhood poverty, and health, a series of three-level random-intercept models are estimated. Levels 1, 2, and 3 reflect individual-level attributes, neighborhood (tract-level) characteristics, and metropolitan-level context, respectively.

The base model, which includes only race/ethnicity, age, gender, and metropolitan-level characteristics as controls, will estimate “gross” effects of metropolitan segregation on health (Model 1). To examine whether segregation is associated with individual health, net of individual SES and neighborhood context, neighborhood and individual SES controls will be added in Model 2. Cross-level interactions between race/ethnicity and metro segregation will then be added to test whether these associations vary by race/ethnicity.

Previous work implicitly assumes that metropolitan segregation’s impact on health is invariant across neighborhoods within the metropolitan area. We will test whether the relationship between metropolitan segregation and health varies across neighborhood type. To test whether neighborhood poverty moderates the impact of segregation on health, a cross-level interaction between neighborhood context and segregation will be included in Model 3. This allows for the impact of metropolitan segregation to differ across neighborhood poverty level. For example, a salutary association between segregation and health may be found within nonpoor neighborhoods while a detrimental association may be recovered within poor neighborhoods. Stratifying these models for Whites, Blacks, and Hispanics allow these relationships to vary by race/ethnicity.

I hypothesize that neighborhood type may modify the effect of metropolitan segregation such that disadvantaged neighborhoods compound the detrimental effect of segregation and affluent neighborhoods provide a protective buffer, regardless of race/ethnicity.

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