



Residential segregation, political representation, and preterm birth among U.S.- and foreign-born Black women in the U.S. 2008–2010



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ARTICLE INFO

Keywords:

Residential segregation
Preterm birth
Political representation
Nativity
Birth certificate

ABSTRACT

Although racial residential segregation is associated with preterm birth (PTB) among non-Hispanic black (NHB) women in the U.S., prior work suggests that increased black political power arising from segregation may be protective for infant health. We examined associations between residential segregation, black political representation, and preterm birth (PTB) among U.S.- and foreign-born NHB women in major U.S. cities using birth certificate data from 2008 to 2010 (n=861,450). Each 10-unit increase in segregation was associated with 3–6% increases in odds of PTB for both U.S.- and foreign-born NHB women. Black political representation was not associated with PTB and did not moderate the association between residential segregation and PTB.

1. Introduction

Preterm birth (PTB) is the leading cause of perinatal mortality in the U.S. and is estimated to cost over \$25 billion annually (Behrman and Butler, 2005). Non-Hispanic black (NHB) women are 60% more likely to deliver preterm compared to non-Hispanic white (NHW) women (Martin et al., 2015). This racial disparity has persisted for decades and is not fully explained by individual-level factors, such as access to prenatal care, smoking, alcohol use, age, education, or income (Braveman et al., 2015; Culhane and Goldenberg, 2011; Lhila and Long, 2012), leading researchers to consider the role of broader macro-social factors contributing to spatial inequalities in residential environments—in particular, racial residential segregation (White and Borrell, 2011).

Residential segregation is defined as the degree to which two or more groups of people (categorized by race, ethnicity, income, or other variables) live separately from one another within an urban environment (Massey and Denton, 1988). In the U.S., blacks have been and remain the most segregated racial/ethnic group. The process of black-white segregation can be traced to the late 19th century freeing of African-American slaves and the subsequent “Great Migration” of blacks from south to north and west (Cutler et al., 1999; Grady, 2006; Wilkerson, 2010), which led to congregation of blacks in particular neighborhoods due to opportunities and social support. From 1940–1970, processes of institutionalized and sanctioned ra-

cism—e.g., manipulation of housing markets and concentration of public housing developments—resulted in the consolidation of the urban black “ghetto” (Cutler et al., 1999). Following the Civil Rights Act of 1968, which made discrimination in the sale or rental of housing illegal, segregation in the U.S. has declined slightly but remains high in many cities. In fact, approximately 60% of blacks would need to move to a different census tract in order for whites and blacks to be equally distributed across metropolitan areas in the U.S. (Logan and Stults, 2011).

Historical and current patterns of residential segregation and concentrated poverty shape social and economic conditions for black Americans at the individual, household, and neighborhood levels—conditions which may, in turn, influence health through behavioral, psychosocial, and biological pathways (Kramer and Hogue, 2009; Williams and Collins, 2001). Racial segregation thus represents a spatial manifestation of institutional racism (White and Borrell, 2011) and is considered a fundamental cause of black-white disparities in health in the U.S.

Racial residential segregation may impact pregnancy health—and subsequently, PTB—through several specific pathways. First, segregation limits individuals’ opportunities for education and employment and constrains their ability to earn income, accumulate wealth, or gain social mobility (Cutler and Glaeser, 1997; Howell-Moroney, 2005). Women with lower income and education are, in turn, more likely to deliver preterm (Blumenshine et al., 2010) perhaps due to constrained

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access to medical care, behavior differences, and/or increased psychosocial stress (Adler and Stewart, 2010).

Segregation may also produce neighborhood environments that are unsafe and lack health-promoting resources. Segregated neighborhoods and cities suffer from higher crime levels (O'Flaherty and Sethi, 2007; Peterson and Krivo, 1993) and socioeconomic disadvantage (Massey and Fischer, 2000), both of which are associated with increased risk of PTB (Masi et al., 2007; Messer et al., 2006; O'Campo et al., 2008). Segregated areas offer fewer options for purchasing healthy food (Morland and Filomena, 2007; Zenk et al., 2006), and more options for purchasing alcohol and tobacco (Zenk et al., 2006) compared to less segregated areas, and segregation has been linked with eating fewer fruits and vegetables (Dubowitz et al., 2008), being less physically active (Lopez, 2006), and smoking during pregnancy (Bell et al., 2007). Segregated areas may face shortages of health care providers, limiting women's ability to access prenatal care or may increase women's exposure to environmental toxins and poor housing quality (Grady and McLafferty, 2007). Segregation may also increase women's perceived levels of discrimination, which has been implicated in risk of PTB for black women (Giurgescu et al., 2011), although some research suggests that higher concentrations of black residents in neighborhoods lowers perceived discrimination (Hunt et al., 2007).

Indeed, research repeatedly shows that living in segregated areas is associated with higher risk of adverse birth outcomes among black women (Anthopolos et al., 2011; Bell et al., 2006; Ellen et al., 2000; Grady, 2006; Walton, 2009), including PTB (Anthopolos et al., 2014; Britton and Shin, 2013; Kramer et al., 2010; Kramer and Hogue, 2008; Osypuk and Acevedo-Garcia, 2008), an association that persists following adjustment for poverty or area measures of socioeconomic status.

Substantial heterogeneity exists in measurement of racial segregation. The proportion of black residents in a census tract has been used as a proxy for segregation, but this measure does not capture important aspects of segregation related to the distribution of individuals within a wider city/region and does not account for the proportion of the overall population that is black (Kramer and Hogue, 2009). Specific measures of segregation often draw on Massey and Denton's seminal work (Massey and Denton, 1988) outlining 5 indices of segregation: evenness/dissimilarity (over- or under-representation of race/ethnic groups in particular areas), exposure (likelihood of encountering members of own or other race/ethnic groups), concentration (physical space occupied by race/ethnic groups), centralization (location of race/ethnic groups relative to an urban core), and clustering (contiguity of race/ethnic groups). Evidence indicates that an uneven distribution of blacks and whites in an urban area (high dissimilarity) and/or high isolation of blacks from whites are associated with worse birth outcomes (Anthopolos et al., 2011; Bell et al., 2006; Britton and Shin, 2013; Ellen et al., 2000; Kramer et al., 2010; Kramer and Hogue, 2008; Walton, 2009).

Although most research emphasizes the negative impacts of segregation, the "ethnic density hypothesis" argues that living in areas with higher concentrations of one's own race or ethnic group may improve health by enhancing social support, social cohesion, or social capital, by reinforcing healthy behaviors, or by providing material or logistical support (Grady and McLafferty, 2007; Osypuk et al., 2010). Indeed, evidence suggests that higher levels of the clustering dimension of segregation are protective against adverse birth outcomes (Bell et al., 2006; Kramer et al., 2010).

A particularly intriguing hypothesis regarding how black-white segregation may improve health was examined in the early 1990s (LaVeist, 1992, 1993) but has received little empirical attention since then. LaVeist hypothesized—based on the theory that race differences in health status are manifestations of power differentials—that black political power may arise from segregated communities and have a beneficial effect on infant health (LaVeist, 1992). That is, racially segregated communities may be better poised to elect black politicians,

organize to effect change, or form partnerships whereby black community leaders influence public policy. Thus, black political power may reflect or result from black political representation, community organization, and/or social capital.

In LaVeist's empirical work using data from the 1980s, black political power was operationalized by black representation on the city council. Indeed, this measure of political power was greater in more segregated cities and was associated with decreased black infant mortality, net of residential segregation, although political representation did not completely account for racial disparities in infant mortality (LaVeist, 1993). Black political representation may therefore represent an important, but overlooked, factor in the relationship between residential segregation and PTB. Mechanisms by which black political representation may impact perinatal health have not been examined in depth in the literature but may include increased allocation of resources in ways that benefit black constituencies or enhanced accountability of non-discriminatory practices in law enforcement (which may decrease discrimination stress) or city service provision. Thus, we hypothesize that 1) higher black political representation may be associated with lower risk of PTB independent of residential segregation, and 2) black political representation may modify the association between segregation and PTB such that the association between segregation and PTB will be weaker in cities with greater black political representation.

Evidence of the "ethnic density hypothesis" is most frequently noted among immigrant communities. For example, living in areas with a higher proportion of foreign-born residents is associated with reduced probability of low birth weight, especially among women who are themselves foreign-born (Finch et al., 2007)—although other work finds that residential segregation is not strongly associated in either direction with birth outcomes for foreign-born Mexican women (Britton and Shin, 2013; Osypuk et al., 2010). Little empirical work, however, has examined whether associations between racial segregation and birth outcomes differ for foreign-born vs. U.S.-born black women. Researchers hypothesize that foreign-born black women may be less vulnerable to the negative health impacts of living in segregated areas compared to U.S.-born women who have lived their entire lives in these areas, and who may also bear the burden of inter-generational effects of segregation (Geronimus, 1992; Grady and McLafferty, 2007). Discriminatory treatment—one mechanism by which segregation may affect health—has indeed been shown to be less commonly reported by foreign-born, pregnant black women compared to U.S.-born, pregnant black women (Dominguez et al., 2009). Empirically, Grady and McLafferty found that segregation in New York City (NYC) in 2000 was associated with higher rates of low birth weight (LBW) among both U.S.-born and foreign-born NHB women (Grady and McLafferty, 2007). Mason and colleagues also used data from NYC (1995–2003), and found that ethnic concentration was associated with increased PTB for African- and U.S.-born NHB women, but not for Caribbean-born NHB women (Mason et al., 2010). Baker and Hellerstedt report increasing proportions of adverse birth outcomes with increasing racial concentration among both native- and foreign-born black women in the Minneapolis area (Baker and Hellerstedt, 2006). These prior studies were all limited to specific cities, however; no data of which we are aware examines the associations between residential segregation and PTB for both U.S.- and foreign-born NHB women across the entire U.S.

Moreover, no literature examines the relationships between black political representation and birth outcomes among foreign-born NHB women. If segregation does have a protective, or null, association with birth outcomes among foreign-born black women, it stands to reason that black political representation may also be less strongly associated with birth outcomes in this group. That is, the protective aspects of "ethnic density" for immigrants may be less influenced by political representation than by the simple fact of living close to those from the same region of the world.

Major gaps in the literature on the association between black-white

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