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Invited Commentary | Equity, Diversity, and Inclusion

Inequities in Rapid Access to Emergency Medical Services Within Historically Redlined Areas

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The color line has been used to describe residential segregation by race in the United States and has more recently been applied to geographic analyses of unequal access to health care.[1] In particular, studies have documented differences in access to emergency and critical illness care—with differences by race often exceeding differences by economic indicators.[2-4] In one study[2] examining access to trauma centers in New York, Chicago, and Los Angeles, Black census tracts were the only group with consistently lower geographic access to trauma centers across all cities, even after adjusting for poverty effects. In another study[3] examining emergency medical services (EMS) transport times to trauma centers in Chicago, Black patients had the longest overall transport times compared with all other racial and ethnic groups.[3] These differences in health care access often produce maps with startling geographic precision along patterns of residential segregation.

Thus, scholars have increasingly examined these differences through the lens of structural disadvantages tied to residential segregation, such as redlining. Redlining refers to the discriminatory practice of denying mortgages or other financial services to residents living in neighborhoods based on race or ethnicity. In an effort to boost the housing market after the Great Depression, the Federal Housing Administration began insuring private mortgages in the 1930s and adopted a grading system published by the Home Owners' Loan Corporation (HOLC) to determine each neighborhood's risk. The system assigned an A through D grade to neighborhoods in more than 200 cities; and those receiving a D grade were considered "hazardous" for lending. Neighborhoods with Black or other racial and ethnic minority residents often received a D grade, which excluded them from not only government-backed insurance but also private lending as the system spread throughout the mortgage industry. While no longer legal today, redlining has had lasting impacts on the concentration of poverty in many US cities. Black families were unable to purchase their homes, often resulting in generational debt rather than generational wealth. Furthermore, White residents in adjacent neighborhoods frequently relocated to avoid the spillover effects of redlining and disinvestment. A contemporary understanding of this practice was popularized by Ta-Nehisi Coates, who said, "They were colored in red.... Black people were viewed as contagion."[5]

Berry and colleagues[6] used the HOLC grading system to examine whether historically redlined neighborhoods were less likely to have rapid access to EMS. They used geospatial analytical tools to define rapid access as a 5-minute travel radius to the nearest EMS station, arguing that 5 minutes is the EMS benchmark for life-threatening conditions (eg, critical injury, firearm injury). The authors hypothesized that redlining may be a key structural disadvantage associated with health care disinvestment and lower access to timely EMS care. They found that historically redlined grade D neighborhoods—still comprising a higher proportion of Black residents today—had 1.6-fold lower access to rapid EMS care relative to grade A ("most desirable") neighborhoods. These patterns of lower access were significant in every region of the United States, including Eastern, Southern, Great Lakes, Western Plains, and Western regions. The largest disparity was among cities located in the Great Lakes region of the United States, with a 2.9-fold disparity among redlined grade D vs desirable grade A neighborhoods. These findings are noteworthy, because while Jim Crow policies resulted in racial segregation of all aspects of life in the South, the HOLC grading system resulted in worsening racial and economic inequities throughout the United States.

However, notable differences in EMS access were evident across regions, with the West region having particularly small disparities in access compared with other regions. This likely reflects regional differences in urban development and the complex interplay between historical redlining boundaries and emergency service planning. For example, some cities allocate emergency resources based on population density, with higher population densities more frequent in redlined neighborhoods. Despite these variations, the overall national pattern revealed by Berry et al[6] remains clear—historically redlined grade D neighborhoods experienced longer EMS response times than grade A neighborhoods.

To our knowledge, this is the first published study to specifically link HOLC grades with EMS access, corroborating a potential relationship between redlining, as an agent of structural racism, and unequal geographic access to timely emergency services. Previous studies have documented racial inequities in access to emergency and critical illness care infrastructure,[2] with extended EMS transport times and increased mortality in areas with lower access to trauma centers.[3,7] Berry and colleagues[6] extend this literature on racial inequity by examining timely arrival of EMS—the first line of defense and stabilization against critical illness or injury, irrespective of access to an acute care facility. Furthermore, they deepen our understanding of historical context by documenting redlining as an underlying policy lever with persistent associations with health care access to rapid EMS among racially minoritized communities.

Stop the Bleed is a national initiative to teach civilian residents and bystanders to help control bleeding in critical emergency situations.[8] The training focuses on proper technique to stop bleeding using direct pressure, tourniquets, and wound packing, since uncontrolled bleeding is the leading cause of death in traumatic injuries. In communities with high rates of firearm violence, this type of training has been critical for the survival of people who may have to wait extended times for professional help to arrive. In many urban areas, this training has been taught to elementary school students as young as 5 years old.[8] The widespread dissemination of this program, in part, may be emblematic of what is already known on the ground in redlined communities—that sometimes, help comes too late.

Future research should investigate whether reparative initiatives could mitigate disparities in health care access. For example, Evanston's Restorative Housing Program provides cash assistance to support home ownership, home improvement, and mortgage assistance among residents who have been historically impacted by housing discrimination.[9] Alternatively, the Low-Income Housing Tax Credit (LIHTC) program is the largest source of affordable housing in the United States[10] and now includes a congressional mandate for all applications to develop concomitant community revitalization plans. Such efforts, focusing on community development and high-quality, affordable housing, may support investment in communities with longstanding histories of disinvestment. Indeed, previous studies have documented associations between LIHTC housing and higher health care access.[10] Addressing historical redlining requires intentional allocation of resources to reduce contemporary inequities in health care access and health outcomes.

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