



# Neighborhood Influences on Seasonal Influenza Vaccination among Older African Americans in Atlanta, Georgia.

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## Abstract:

Influenza vaccination coverage in the US is least than the recommended Healthy People 2020 threshold, especially among older African Americans. This report explores the complex relationship among neighborhood-level factors, socio behavioral influences, and influenza vaccination outcomes among older African Americans.

Despite a Healthy People 2020 goal that aims for 90% influenza vaccination coverage for those over age 65, vaccine coverage remains suboptimal for older adults with an estimated 60% coverage rate among Medicare beneficiaries. Least coverage rates are particularly alarming as influenza-related illnesses result in considerable morbidity and mortality in this segment of the U.S. population each year. This phenomenon is mainly persistent for those  $\geq 65$  years already suffering with chronic diseases or infections that are therefore highly vulnerable to severe influenza-related illness. During the 2012-2013 influenza season, the rate of hospitalization among influenza cases for older persons  $\geq 65$  years was about 280/100,000, compared to about 30/100,000 among younger populations ( $\leq 64$  years).

Many studies have explored factors influencing vaccination uptake, including delay and refusal reasoning. Moreover, most have focused on childhood influenza immunization and issues pertaining to influenza acceptance, delay, and refusal among special populations such as pregnant women. Fewer have focused on the factors contributing to older populations' acceptance of influenza vaccines, and issues concerning disparities arising from under immunization of racially and ethnically diverse populations. Moreover, there is scant evidence beyond individual knowledge, attitudes, and beliefs to account for influencers of vaccine uptake and immunization intentions reported in this specific group.

There is a dearth of information on the interaction of neighborhood- and individual-level characteristics and their influence on influenza immunization specifically among older African Americans. Neighborhood-level analysis adds to our understanding of how and why some communities experience lower vaccination coverage than others. Thus, this study offers an important contribution as it focuses on exploring these interactions to improve vaccination uptake among one of the most vulnerable groups in the community.

Variables of interest included socio demographics, attitudes and perceptions, neighborhood-level factors, and vaccination outcomes. Variables were organized into groups based on the

socio ecological framework. On the individual level, we measured socio demographic factors such as age, sex, education level, employment status, and health insurance status. Influenza vaccination receipt was measured by a 'yes' or 'no' based on responses given to whether they received the 2012-2013 seasonal influenza vaccination.

We constructed our Atlanta-specific neighborhood deprivation index using the same variables as the original index: percentage of female headed households with dependents, unemployment rate, percentage of households under the poverty line, percentage of households receiving public assistance, percentage of households with income under \$30,000, percentage of crowded households (defined as greater than one person per room), percentage of males in management and professional positions, and the percentage of population with less than high school education.

Because we were exporting the effect of neighborhood-level variables on individuals, we accounted for possible uncaptured correlations between individuals in the same census tracts using Generalized Estimating Equations (GEE). The census tract was used the subject (clustering) variable. The hypothesized neighborhood-level correlations between individuals were assumed to be equal; hence we chose an exchangeable correlation structure for these models.

Future public health programs aimed at increasing vaccine coverage among older minorities will benefit from this study as it reveals the distal influence of the built environment on individual actions. Influenza vaccination programs will be able to more effectively target those with fewer resources by circumventing barriers such as ease of access to clinics. Additionally, the study suggests that continued awareness-building promotion of the benefits of immunizations for persons in this age group will enhance the lack of knowledge and thus foster more positive attitudes toward vaccinations.

This study reveals direct and distal effects of neighborhood and individual-level factors that may influence vaccination decisions in communities. The findings reveal that older age, perceptions of neighborhood security, health insurance, vehicle availability, and positive attitudes toward vaccinations, had a role in influenza vaccination decisions among older African Americans. Thus, the research can inform possible socio structural interventions to improve vaccination access for this highly vulnerable population.

**Keywords:** Influenza vaccination; Immunization; Socio ecological model; Health disparities; African Americans