Housing, the Neighborhood Environment, and Physical Activity among Older African Americans

Lonnie Hannon III, PhD Tuskegee University
Patricia Sawyer, PhD University of Alabama at Birmingham
Richard M. Allman, MD Birmingham/Atlanta VA Geriatric Research, Education, and Clinical Center and the University of Alabama at Birmingham.

ABSTRACT
This study examines the association of neighborhood environment, as measured by housing factors, with physical activity among older African Americans. Context is provided on the effects of structural inequality as an inhibitor of health enhancing neighborhood environments. The study population included African Americans participating in the UAB Study of Aging (n=433). Participants demonstrated the ability to walk during a baseline in-home assessment. The strength and independence of housing factors were assessed using neighborhood walking for exercise as the outcome variable. Sociodemographic data, co-morbid medical conditions, and rural/urban residence were included as independent control factors. Homeownership, occupancy, and length of residency maintained positive associations with neighborhood walking independent of control factors. Housing factors appear to be predictive of resident engagement in neighborhood walking. Housing factors, specifically high rates of homeownership, reflect functional and positive neighborhood environments conducive for physical activity. Future interventions seeking to promote health-enhancing behavior should focus on developing housing and built-environment assets within the neighborhood environment.

Keywords: Housing, Neighborhood, Neighborhood Disadvantage, African American, Physical Activity
INTRODUCTION: Inequality in the Neighborhood Environment

The neighborhood environment plays a primary role in providing opportunities for physical activity. The association of the neighborhood environment with physical activity can be examined by assessing the characteristics that promote or impede physical activity. Much discussion has revolved around the factors that influence these traits including research from Diez-Roux et al. (2001) suggesting that macroeconomic effects that adversely impact the neighborhood environment contribute to the negative health outcomes experienced by residents. The interplay between place and health outcomes suggests that neighborhood environment plays a powerful role in influencing health behaviors. Neighborhood environments characterized by economic disadvantage resulting from social inequality and related deficits in housing resources may limit opportunities to engage in positive health behavior.

Social scientists, most notably Wilson (1987; 1996), surmise that unhealthy conditions within impaired neighborhood environments resulted from macroeconomic transitions in which increased demand for highly skilled workers in the digital technology sector corresponded with declines in industrial-manufacturing employment opportunities. This trend, in combination with the displacement of low-skill employment to foreign countries left a substantial gap in employment opportunities for urban residents, many of whom were African American males unprepared for the changing job market.

Wilson suggests that the absence of jobs for young, urban African Americans has led to severe economic declines in many neighborhoods. The resulting economic and social disadvantage engendered many of the neighborhood characteristics associated with what Ross and Mirowsky (2001) describe as disorder, which includes poorly maintained built environments, crime, distrust, and unruliness. These by-products exacerbate the ongoing struggle for housing equality experienced by many African American residents. The problem is especially salient for older African Americans who experienced subpar access to housing resources through the widespread practice of de jure segregation.

Housing is a vital component of the neighborhood environment affected by economic and political forces. The neighborhood-level benefits of quality housing, specifically homeownership, include a critical mass of financially and emotionally invested residents as well as aesthetic beauty. These attributes strengthen the quality of the overall neighborhood environment leading to opportunities for physical activity among residents. Hannon, Sawyer, and Allman (2012) have described the importance of housing factors in predicting physical activity levels among older adults.

Many African American neighborhoods were affected by exclusionary policies that limited the ability of residents to purchase high quality, neighborhood-enhancing housing. From the Great Depression until the late 1960’s, the Federal Government, real estate elites, bankers, and insurers participated in the systematic practice of denying loans and insurance to African Americans (Freund, 2007; Hillier, 2003). This practice included identifying African American neighborhoods as risk hazards by using red lines (redlining) to delineate these areas (Freund, 2007; Hillier, 2003). The Federal Housing Administration (FHA), created by Franklin Roosevelt in response to the housing crisis emanating from the Great Depression, refused to underwrite loans in red areas. Because of this, lenders were hesitant to provide financing to homebuyers without FHA support.

Radford (1996) reports that a “two tiered” system was enacted to ensure racial homogeneity in low-risk areas where white, middle class residents received loans underwritten
by the FHA or VA (Veteran’s Administration) to purchase homes. Potential African American homeowners were steered toward public housing and government rental programs (Johnson, 2010; Hoffman, 2007; Radford, 1996). The practice of discriminatory commerce by government policy-makers and private business leaders effectively excluded many African Americans from homeownership and helped ignite the mass migration of White residents to low-risk designations, primarily in suburban areas. The outmigration to the suburbs that followed became known as white flight. This, along with the effects of the previously mentioned macroeconomic changes, further isolated economically disadvantaged African Americans.

The process of redlining contributed to race-based geographic segregation. This form of institutionalized racism limited the opportunities for African American homeownership curtailing opportunities for tax credits, wealth-building, and neighborhood stability (Johnson, 2010). The decline in employment opportunities and the widespread inability to secure credit for housing contributed to the adverse conditions within the neighborhood environment experienced by many African American residents. The legacy of these problems remains today and is specifically relevant for older African Americans, many of whom have experienced a lifetime of adverse consequences due to social and economic inequality.

The macroeconomic transitions over the last quarter-century and patterns of housing inequities have contributed to unhealthy environments within disadvantaged African American neighborhoods. As Williams and Collins (2001) argue, the problem is exacerbated by salient patterns of racial segregation experienced by residents whose neighborhood environments are isolated from high-quality resources that promote positive health behavior in the form of schools, housing, infrastructure, and employment.

**Inequality in the Neighborhood Environment, Physical Activity, and Health Outcomes**

The neighborhood environment affects many disparities in health outcomes between African Americans and other racial/ethnic groups. Research shows that the role of neighborhood environments in influencing health behavior can be examined along racial and socioeconomic lines (Gordon-Larsen et al, 2006; Powell et al., 2006; Ross & Mirowsky, 2001; Fitzpatrick & LaGory, 2000; Wilson, 1996; Massey, 1990). Importantly, Cooper (2004) maintains that disease-promoting environments, not genetic factors, contribute to poor health outcomes among many African Americans. Fitzpatrick and LaGory (2000) argue that “the characteristics of the communities that minorities live in” account for much of the differences in illness mortality between Whites and African Americans. Additional studies of racial health disparities associated with the built environment and physical activity focus on crime rate (Casagrande et al., 2009), obesity (Lovasi et al., 2009; Heinrich et al, 2008), and access to community exercise facilities (Powell, Slater, & Chaloupka, 2004).

There is agreement among health officials and researchers that physical activity improves health outcomes (Blair & Morris, 2009; Nelson et al., 2007; Warburton, Nicol, & Bredin, 2006). Evidence validates the positive effects of physical activity on preventing or mitigating diseases associated with leading causes of death in the United States including heart disease (Bowles & Laughlin, 2011), stroke (Howard, 2007), and chronic obstructive pulmonary disease (Hopkinson & Polkey, 2010). The Centers for Disease Control [CDC] (2012) reports a salient disparity in physical activity between Whites and African Americans with approximately 37.3% of African Americans meeting federal guidelines for aerobic physical activity compared to 48.8% of Whites. This gap in physical activity attainment likely contributes to health disparities. Indeed,
African Americans have higher morbidity rates from cardiovascular disease, stroke prevalence, and hypertension than their White counterparts (National Center for Health Statistics [NCHS], 2011).

**Study Aims**

This study examines physical activity by measuring the amount that residents walk in their neighborhood in relationship to housing factors. Because of the prominent role of sociodemographic factors (Frank et al., 2008) and the potential for rural/urban differences in influencing physical activity, both are examined as control variables. Comorbidities, the number of chronic conditions, were also included as control factors. The overall objective is to examine the influence of neighborhood environment on physical activity as measured by the rate that residents walk for exercise using a sample of older African Americans living in the South. A within-group analysis is used to examine the strength, direction, and independence of housing - a major indicator of neighborhood economic functioning - with physical activity among African Americans, a population that has experienced considerable inequality in opportunities for fair, high quality housing. This study will create a platform for future comparative studies with other racial/ethnic groups.

While not a primary aim of this study, there is an interest in homeownership’s influence on physical activity in rural neighborhoods given that most studies are based on urban perspectives. An assessment of differences between rural and urban residents may be informative to future analyses.

**Theory**

This study uses a variation of the multilevel social ecological model (CDC, 2009; Dahlberg & Krug, 2002) to assess the influence of neighborhood environment on physical activity as measured by walking. The model uses a systems approach to predict factors affecting health behavior where societal factors such as macroeconomic conditions affect community or neighborhood functioning. In turn, individual behavior is influenced by the relational interactions, available resources, and opportunities defined by the neighborhood context.

Similarly, the current study suggests that health behaviors and their subsequent outcomes are a partial function of societal factors influencing neighborhood environment. The neighborhood context for many African American residents is affected by macroeconomic and policy forces as well as related inequality in housing opportunities.

Housing is an essential element in defining the neighborhood environment because it represents owner-investment in the community. Owner-occupied homeownership is indicative of resident investment in the neighborhood. Occupancy rates define the level of desirability for housing within a specific neighborhood. Also, occupancy levels speak of the neighborhood environment’s ability to attract residents. Given that home values reflect the financial worth of an individual house as well as the neighborhood in which it exists, median home values are important indicators of assessed neighborhood quality. Length of residency assesses the amount of time a resident has lived in a particular neighborhood. Longer lengths of residence depict the potential for greater emotional investment in the community by residents. Fear of crime assesses resident perceptions of the neighborhood environment in terms of its ability to provide a safe atmosphere conducive to positive health behaviors, such as walking.
There is limited literature or data on housing as a key element of the neighborhood built environment and its influence on physical activity in the form of neighborhood walking. As noted, the neighborhood environment can inhibit or promote health-enhancing behavior among residents. The following hypothesis is derived from the above theoretical format:

Hypothesis 1: Neighborhood factors (homeownership, occupancy, median home value, length of residency, and lack of fear) will be positively correlated with neighborhood walking.

Data on specific sociodemographic factors associated with physical activity suggest that older residents are more inactive than their younger counterparts (CDC, 2012). Males are more active than females. Physical activity levels tend to rise with increased educational attainment and income. Married couples tend to be less active than those who are widowed, divorced, never married, or living with a partner. Furthermore, research indicates that sociodemographic variables may have a substantial direct impact on physical activity among residents (Frank et al., 2008). As a result, such factors should be included as controls in models testing the significance and independence of the neighborhood environment variables.

Hypothesis 2: The positive correlation between housing factors and neighborhood walking will remain robust after controlling for sociodemographic factors.

METHODS

This project examined housing characteristics as a key element of the neighborhood environment and its influence on neighborhood walking among participants who self-reported as being African American. Participants demonstrated the ability to walk as determined by observed performance at the baseline interview. The study participants were recruited from the Medicare beneficiary lists of five counties in central Alabama, a state that is a prominent member of the “stroke belt” – a region in the southeastern United States where incidence and prevalence of stroke are disproportionately high (Howard et al, 2005). Counties include Jefferson, Tuscaloosa (urban) and Hale, Pickens, and Bibb (rural). At the time of data collection, the population of the study area was 1,172,717 according to the 2000 U.S. Census. Respondents represented cities and rural areas covering 178 census tracts.

Data

Individual level data were derived from the University of Alabama at Birmingham (UAB) Study of Aging (Allman, Sawyer, & Roseman, 2006), a cohort study of a random sample of community-dwelling Medicare beneficiaries age 65 and older, stratified by race (self-described), gender, and county designated urban/rural residence (50% rural, 50% male, 50% African American). Respondents completed a baseline in-home evaluation between 1999-2001 to understand racial differences in mobility and risk factors for mobility loss. The study protocol was approved by the UAB Institutional Review Board as was the current secondary data analysis. Permission for use and access to the data was granted by the Principal Investigator of the UAB Study of Aging. The data from the UAB Study of Aging were merged with publically available data from the 2000 U.S. Census Summary File 3 to test the above hypotheses. This analysis included African Americans over the age of 65 (n=433) who participated in the UAB Study of Aging.
Variables

Neighborhood walking was chosen as the dependent variable because it is an outdoor activity that can take place within the neighborhood. Walking is a simple form of physical activity easily recognized and understood across cultures, disciplines, and age groups. The dependent variable representing neighborhood walking was taken from the question, “think about the walking you do outside your home. During the last week, about how many blocks did you walk?” The responses were categorized by taking the reported number of blocks walked in a week and dividing by seven to calculate daily walking average. If, for example, a respondent reported walking 14 blocks, then they would have averaged 2 blocks per day. Using this rubric, residents who reported no activity in the form of walking (0 blocks walked) comprised category one. Category two contained those that averaged less than 1 block per day (1-6 blocks walked per week). Those that averaged 1-2 blocks per day were placed in category three (7-14 blocks walked) and those averaging more than 2 blocks per day were in category four (>15 blocks walked).

The categories were created for interpretive purposes only. Because of this, there is potential deviation from assumptions of normality and homoscedasticity. However, ordinary multiple regression is robust to violations of these assumptions. Thus, the likelihood of Type 1 Error in this case is small, especially given the relatively large size of this sample which mitigates the effects of unequal variances.

Housing characteristics from tract-level data from the 2000 U.S. Census Summary File Three were merged into the UAB Study of Aging data set for each participant. Variables representing housing characteristics were derived from U.S. Census data: Neighborhood Homeownership measured the percent of owner-occupied housing within specific census tracts; Neighborhood Occupancy measured the percent of occupied housing in the community in contrast to vacant housing. This variable reflects vibrancy within the community given that a significant amount of vacant housing is a sign of neighborhood blight and divestment; and Neighborhood Median Home Value measured neighborhood socioeconomic status and the level of personal investment in housing.

Individual level data related to housing was available from the baseline questionnaire. Previous Residence was dummy-coded to measure whether the resident’s self-reported previous dwelling was in the same or a different community. Length of Residency measured in years how long the respondent lived at his or her current residence. Participants were asked if their activities were limited because of a fear of being “robbed or attacked.” This was dummy-coded as a measure of the influence of crime on resident behavior.

Sociodemographic factors that have been identified in the literature to be influential to neighborhood walking are also examined in the analyses. Sociodemographic variables assessed during the baseline in-home interview included Income which was based on self-reported annual household income for the following categories: 0 < $5,000; 1 = $5,000-$7,999; 2 = $8,000-$11,999; 3 = $12,000-$15,999; 4 = $16,000-$19,999; 5 = $20,000-$29,999; 6 = $30,000-$39,999; 7 = $40,000-$49,999; 8 ≥ $50,000. Respondents not reporting income were asked questions about income adequacy. Four categories of answers were used to impute income based on the following question: “All things considered, would you say your income is not enough to make ends meet ($5,000 to $7,999); gives you just enough to get by on ($8,000 to $11,999); keeps you comfortable, but permits no luxuries ($16,000 to $19,999); or allows you to do more or less what you want ($30,000 to $39,999)?”
Age was used as an interval variable. Sex was dummy coded with 1=female. Education assessed the highest level of formal education attained by the respondent. The categories ranged from 6 (6th grade education or less) to 17 (completion of graduate or professional school). Marital Status was coded as not-partnered = 1 (single, divorced or separated) versus partnered = 0 (married).

Because individual health status may affect physical activity independently of neighborhood factors, comorbidities, the number of chronic conditions, were included as potentially limiting neighborhood walking. The baseline interview included self-reports of physician diagnosed medical diseases and conditions. To verify the presence of a disease or condition, participants had to report taking a medication for any condition, their primary physician had to report that they had the condition, or the condition had to be documented on a hospital discharge chart within a three-year period before entry into the study. Verified comorbidities that are a part of the Charlson Comorbidity Index (1986) were summed without consideration of severity to develop a comorbidity count.

Geographic location, whether the participant lived in a rural or urban area was included in the analysis. The variable Urban was based on Census designation and was included to compare differences between rural and urban communities in terms of neighborhood walking. Also, descriptive characteristics of homeownership, occupancy, and length of residency by geographic location were generated to compare rural and urban environments.

Analysis

Four models were created using linear regression analysis in SPSS. Model 1 examined only housing variables. Model 2 added sociodemographic variables to examine any change in the relationship of the neighborhood environment variables when controlling for sociodemographic factors. Comorbidity was added in Model 3, as a factor potentially impacting physical activity. Model 4 tested the influence of geographic location - whether the resident lived in an urban or rural area - on neighborhood walking.

RESULTS

Tables One and Two report descriptive statistics, several of which are notable. The data showed considerable residential diversity among the target population. This is depicted in the wide range of scores for several factors. For example, the mean percentage for neighborhood homeownership was 67.8% with percentages ranging from 3% to 94%. The same was true for neighborhood median home value with prices ranging from $30,500 to $391,000. Moreover, the population appeared to be relatively stable residentially with the mean length of time at the current residence being 27.4 years.

Although there was diversity in terms of socioeconomic status, the overall picture suggested that this is a low-income population with low levels of education. The mean income category was 2.5 which equated to a range of $8,000 to $15,999 in annual household income. Approximately, 60% of the respondents were not currently married. The average number comorbidities reported was 2 (SD = 1.6).
Table 1

*Neighborhood Housing and Sociodemographic Sample Characteristics*

<table>
<thead>
<tr>
<th>Tract-Level Census Variables</th>
<th>Mean</th>
<th>Low</th>
<th>High</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighborhood Homeownership</td>
<td>67.8%</td>
<td>3.0%</td>
<td>94.0%</td>
<td>18.9</td>
</tr>
<tr>
<td>Neighborhood Occupancy</td>
<td>87.5%</td>
<td>67.0%</td>
<td>98.0%</td>
<td>5.2</td>
</tr>
<tr>
<td>Median Home Value (U.S. $)</td>
<td>62,452</td>
<td>30,500</td>
<td>391,000</td>
<td>30,030</td>
</tr>
</tbody>
</table>

**Individual Level Variables**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>75.5</td>
<td>65.0</td>
<td>97.0</td>
</tr>
<tr>
<td>Comorbidities</td>
<td>2.22</td>
<td>0</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Table 2

*Sample Characteristics by Income and Education*

<table>
<thead>
<tr>
<th>Education</th>
<th>Percent</th>
<th>Income</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 6th</td>
<td>36.1</td>
<td>&lt; 5,000</td>
<td>7.4</td>
</tr>
<tr>
<td>7th</td>
<td>6.2</td>
<td>5,000-7,999</td>
<td>29</td>
</tr>
<tr>
<td>8th</td>
<td>6</td>
<td>8,000-11,999</td>
<td>26.2</td>
</tr>
<tr>
<td>9th</td>
<td>7.1</td>
<td>12,000-15,999</td>
<td>10.8</td>
</tr>
<tr>
<td>10th</td>
<td>6.4</td>
<td>16,000-19,999</td>
<td>7.4</td>
</tr>
<tr>
<td>11th</td>
<td>5.7</td>
<td>20,000-29,999</td>
<td>9.7</td>
</tr>
<tr>
<td>High School/GED</td>
<td>17.5</td>
<td>30,000-39,999</td>
<td>6.7</td>
</tr>
<tr>
<td>Some college</td>
<td>5.1</td>
<td>40,000-49,999</td>
<td>1.4</td>
</tr>
<tr>
<td>Associates Degree</td>
<td>2.3</td>
<td>50,000+</td>
<td>1.4</td>
</tr>
<tr>
<td>College graduate</td>
<td>3.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some graduate or professional school</td>
<td>1.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate or professional degree</td>
<td>2.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The income category was based on self-reported total annual household income for participants and was imputed for those not reporting income.

**Linear Regression Analysis**

Table 3 presents the multimodel linear regression analyses with the explained variance and F statistics for each model. The Pearson’s R Square statistic indicated that the explained
variance increased for each step with the addition of independent variables. The greatest increase in explained variance occurred between Models 1 and 2 suggesting that the inclusion of sociodemographic variables had a powerful explanatory impact on the overall analysis. Each model was statistically significant according to the F statistic.

Table 3

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homeownership</td>
<td>.198***</td>
<td>.195***</td>
<td>.190***</td>
<td>.105*</td>
</tr>
<tr>
<td>Occupancy</td>
<td>.132*</td>
<td>.103</td>
<td>.098</td>
<td>.180**</td>
</tr>
<tr>
<td>Median Home Value</td>
<td>-.081</td>
<td>-.098</td>
<td>-.094</td>
<td>-.087</td>
</tr>
<tr>
<td>Length of Residency</td>
<td>.063</td>
<td>.097*</td>
<td>.086*</td>
<td>.092*</td>
</tr>
<tr>
<td>Limit activities for fear of being robbed or attacked</td>
<td>.005</td>
<td>.066</td>
<td>.055</td>
<td>.064</td>
</tr>
<tr>
<td>Income</td>
<td>.088</td>
<td>.075</td>
<td>.093</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.121*</td>
<td>-.119*</td>
<td>-.123**</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>-.143**</td>
<td>-.150**</td>
<td>-.153**</td>
<td></td>
</tr>
<tr>
<td>Education Level</td>
<td>-.020</td>
<td>-.022</td>
<td>-.014</td>
<td></td>
</tr>
<tr>
<td>Not Married</td>
<td>-.147**</td>
<td>-.142**</td>
<td>-.139**</td>
<td></td>
</tr>
<tr>
<td>Comorbidity</td>
<td>-.134**</td>
<td>-.125**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td></td>
<td></td>
<td>-.193**</td>
<td></td>
</tr>
<tr>
<td>Pearson’s R²</td>
<td>.051</td>
<td>.150</td>
<td>.168</td>
<td>.188</td>
</tr>
<tr>
<td>Model F</td>
<td>4.466***</td>
<td>7.257***</td>
<td>7.497***</td>
<td>7.855***</td>
</tr>
</tbody>
</table>

*p<.05     ** p< .01  ***p<.001

Model 1 shows that neighborhood homeownership and neighborhood occupancy had the most powerful influence on neighborhood walking among the housing variables. Increases in homeownership and occupancy corresponded with higher levels of neighborhood walking among residents. Neighborhood homeownership and occupancy were the only statistically significant variables in Model 1. Thus, Hypothesis 1 (all housing variables will have a significant positive relationship with neighborhood walking) was only partially confirmed.
Even though the explanatory power of Model 2 was almost triple that of Model 1, the impact of homeownership remained robust. Here the association of homeownership with neighborhood walking remained significant and independent. The inclusion of the sociodemographic factors in Model 2 reduced the influence of homeownership only slightly. In addition, length of residence was positive and significant in the second model. This further supports the expectation that older residents who have lived in the community longer may have greater ties to the neighborhood environment and in turn, they may be more inclined to participate in outdoor walking.

The sociodemographic variables age, sex, and marital status had significant associations with neighborhood walking. There was an absence of a statistically significant correlation between income and neighborhood walking.

Homeownership remained statistically significant and robust in Model 3 when adding comorbidities to the equation. Length of residence also maintained its influence. This is true although comorbidities had a statistically significant and relatively strong inverse association with neighborhood walking.

As demonstrated in Model 4, geographic location, defined as whether or not the resident lived in an “urban” area, reduced the impact of neighborhood homeownership as a correlate of neighborhood walking. However, neighborhood occupancy rate and length of residency appeared to gain strength with the inclusion of urban residence.

Table 4 shows descriptive statistics for homeownership, occupancy, and length of residency by geographic location. The number of comorbidities was similar for rural and urban residents. Urban residents on average earned approximately $4,000 more than their rural counterparts and had a slight advantage in terms of length of residency. The greatest and most salient discrepancy between rural and urban respondents was the gap in neighborhood homeownership.

<table>
<thead>
<tr>
<th>Table 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean Housing, Income, and Chronic Conditions by Geographic Location</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Homeownership</td>
</tr>
<tr>
<td>Occupancy</td>
</tr>
<tr>
<td>Length of Residency</td>
</tr>
<tr>
<td>Income Category</td>
</tr>
<tr>
<td>Comorbidity</td>
</tr>
</tbody>
</table>
DISCUSSION

The Neighborhood Environment and SES

The literature suggests that the neighborhood environment has a major impact on physical activity, a view that is supported by this study. Here, housing factors, especially in the form of homeownership, had a substantial association with neighborhood walking among older African Americans. The multivariate analyses for this study demonstrated positive relationships between housing (homeownership, occupancy rate, and length of residency) and neighborhood walking.

Although the available literature suggested that higher SES is positively associated with physical activity, the data from the current study showed that neither income nor median home value were statistically significant. A potential explanation is that affluent African Americans living in areas where the median housing values are high may reside in suburban communities designed for the automobile. Research shows that such areas are not as walkable as older suburbs or central city communities (Berrigan & Troiano, 2002).

This study demonstrates how the neighborhood environment as represented by housing factors may be a primary correlate of older residents obtaining higher rates of physical activity. It is evident that high levels of homeownership, occupancy, and long-term residency may create an atmosphere within a community that promotes neighborhood walking. Yet the dollar value of housing does not have to be expensive. It is perhaps more important for individuals to have equal opportunity to the resources that traditionally lead to positive neighborhood environments such as quality housing at fair values and well-maintained built environments.

Urban versus Rural

The likelihood of homeowners engaging in physical activity declines when adjusting for residence in urban areas. This may give credence to the possibility that the macroeconomic transitions and related housing inequality experienced by African Americans may be more acute in urban areas. Moreover, Table 4 suggests that this finding may be impacted by the relatively low-levels of homeownership within urban neighborhoods. This finding warrants further study on urban/rural differences concerning the relationship between neighborhood disadvantage and physical activity.

Limitations

This study contains several limitations. First, is its cross-sectional nature which limits the ability to make causal claims and broader generalizations. Another weakness involves the use of Census tracts as proxies for neighborhoods given that neighborhood boundaries often do not coalesce with tract designations. Importantly, this study does not compare African Americans with other racial/ethnic groups; however, the findings provided do establish a sound basis for future comparative studies. Also, this analysis does not examine individual chronic diseases. Future analyses will test the correlative influence of housing on individual chronic disease occurrence and morbidity. Finally, this study does not account for climate variations that may affect physical activity. Future studies will develop an accurate metric that accounts for this influence.
CONCLUSION

The importance of housing factors in promoting a neighborhood environment conducive for physical activity is salient. Not only is housing indicative of the level of socioeconomic functioning, but it also is predictive of the neighborhood environment’s ability to confer positive health benefits to residents. Historically, many African Americans neighborhoods experienced barriers that precluded them from full use of this resource. The limited use of housing as a resource has contributed to disparities in socioeconomic growth and positive lifestyle behaviors, both of which are affected by unhealthy neighborhood environments. Many older African Americans have experienced a wide range of such disparities.

Older African Americans, and their younger counterparts, continue to experience inequality in housing. This was demonstrated by lending practices leading up to the housing crash of 2008. African Americans living in racially segregated areas were more likely to receive subprime loans from banks of dubious financial standing (Rugh & Massey, 2010; Avery, Brevoort, & Canner, 2008).

Whereas racially segregated African Americans have historically found it difficult to secure loans, the advent of securitized mortgages as an investment strategy called for a new market of homebuyers which included, ironically, marginalized African Americans (Williams, Nesiba, & McConnell, 2005). Securitized mortgages were loans provided by banks and immediately sold as investment securities in the financial market. Research suggests that subprime lenders disproportionately targeted socially isolated African Americans unfamiliar with the nuances of this lending process (Avery, Brevoort, & Canner, 2007; Stuart, 2003). Often this group included older African Americans who were persuaded into signing off on adjustable rate loan terms that were not clearly stated and therefore confusing (Rivlan, 2010).

The excess of subprime lending created a market bubble that collapsed with the economic downturn precipitated by the fall of domestic housing and global credit markets. Recipients of subprime loans experienced mushrooming interest payments leading to substantial increases in foreclosures (Rivlan, 2010). While these events affected the entire country, socially isolated, African Americans and Hispanics with limited education were affected at higher rates than other racial/ethnic groups (Rugh & Massey, 2010; Edmiston, 2009; Calem, Hershaff, & Wachter, 2004; Lax et al., 2004).

Neighborhood environments are vital to individual and group well-being. Because of this, policy-makers and concerned citizens should give attention to the factors that promote neighborhood decline in African American communities. The loss of blue-collar manufacturing jobs had a devastating impact on economic opportunities for many African American males creating a downward trend in socioeconomic functioning within low-income African American neighborhoods.

Furthermore, the unequal distribution of homeowner loans provided by the banking elite and underwritten by the FHA precluded many African Americans from homeownership. As a result, they never had the opportunity to engage in the primary method of building net worth in America.

These factors, combined with recent evidence of the importance of place in influencing health outcomes, may help explain why many African Americans, especially older adults, experience disparities in life quality and wellness. Policy-makers and advocates should address these problems incrementally by promoting legislative and community-oriented interventions that focus on developing positive neighborhood environments. This can be accomplished by
providing equitable homeownership opportunities for underserved minorities and infrastructural improvements to the built environment. Engaging in physical activity, particularly neighborhood walking, is not just an individual decision, but a consequence of walkable neighborhoods. Environments that promote walking will also promote health, not only for older adults, but for people of all ages.

ACKNOWLEDGEMENTS
UAB Study of Aging - NIA Grant R01 AG015062
Resource Center for Minority Aging Research (RCMAR) – NIA Grant P30AG031054
UAB Center for Clinical and Translational Science – NIH Grant 5UL1 RR025777
The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute on Aging or the National Institutes of Health.

REFERENCES
40 Housing, the Neighborhood Environment, and Physical Activity among Older African Americans – Hannon, Lonnie et al.


