Title
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Journal
Ethnicity and Disease, 26(1)

ISSN
1049-510X

Authors
Yan, T
Liang, LJ
Vassar, S
et al.

Publication Date
2016-12-01

DOI
10.18865/ed.26.1.17

Original Report: Cardiovascular Disease and Risk Factors

Neighborhood Characteristics Are Associated with Racial and Gender Variation in Walking among Older Adults: the Cardiovascular Health Study

Tingjian Yan, PhD[1]; Li-Jung Liang, PhD[2]; Stefanie Vassar, MS[2]; Monica Cheung Katz, MS[3]; Jose J. Escarce, MD, PhD[2]; W. T. Longstreth, Jr., MD, MPH[4]; Sharon Stein Merkin, PhD, MHS[5]; Arleen F. Brown, MD, PhD[2]

Objective: To examine variation by race and gender in the association between neighborhood socioeconomic status and walking among community-dwelling older adults.

Design: Cross-sectional.

Setting: Cardiovascular Health Study, a longitudinal population-based cohort.

Participants: 4,849 adults, aged > 65 years

Measurements: Participants reported the number of city blocks walked in the prior week. Neighborhood socioeconomic status (NSES) was measured at the level of the census tract. Negative binominal regression models were constructed to test the association between NSES and blocks walked. In the fully adjusted models, we included two-way and three-way interaction terms among race, gender, and NSES.

Results: In adjusted analyses, among White residents in the lowest NSES quartile (most disadvantaged), men walked 64% more than women (P<.001), while in the highest NSES (most advantaged), men walked 43% more than women (P<.001). Among African American residents in the lowest NSES quartile, men walked 196% more blocks than women (*P*<.001).

Conclusions: Female gender is more strongly associated with walking for African Americans than for Whites in low SES neighborhoods but had a similar association with walking for both African Americans and Whites in high SES neighborhoods.
Ethn Dis. 2016; 26(1):17-26; doi:10.18865/ed.26.1.17

Keywords: Neighborhood Socioeconomic Status, Walking, Physical Activity

Introduction

Walking is the most common form of physical activity among adults age > 65 years.[1] A small increase in walking is associated with substantial health benefits.[2] Yet, older adults are the most sedentary age group, and within this group gender and racial disparities are well-documented in amount of walking and other forms of exercise.[3] Among persons ≥65 years, women are more sedentary than men[4,5] and African Americans engage in less physical activity than Whites.[6-9]

Racial and gender differences in physical activity may be accounted for or conditioned upon the residential environment. Features of the residential neighborhood environment, such as street design, aesthetic qualities, safety from crime, and socioeconomic characteristics, have been associated with walking among older adults.[10-14] Very limited evidence indicates that the association between neighborhood and walking may vary by older residents' race[15] or gender,[16] and these studies have been restricted to older adults living in a single geographic area,[15] or a small group of people.[16] More evidence is warranted.

To better understand the relationship between neighborhood socioeconomic and physical characteristics and racial and gender variation in walking, we analyzed data from a longitudinal study of community-dwelling older adults. We hypothesized that the socioeconomic status (SES) of neighborhoods would be associated with walking and would contribute to the variation in amount of walking observed across race and gender.

[1]HealthCore Inc.
[2]UCLA Geffen School of Medicine, Department of Medicine, Division of General Internal Medicine and Health Services Research
[3]John A. Burns School of Medicine, University of Hawaii
[4]University of Washington, Department of Neurology
[5]UCLA Geffen School of Medicine, Division of Geriatrics

Address correspondence to Stefanie D. Vassar, MS; Division of General Internal Medicine and Health Services Research, University of California, Los Angeles, California. svassar@ucla.edu

Methods

Study Population and Data Sources

Cross-sectional study data are from the baseline survey of the Cardiovascular Health Study (CHS), a longitudinal, population-based study of cardiovascular disease and stroke in adults aged >65 years.[17] Eligible participants were randomly sampled from Medicare beneficiary lists within four United States communities in North Carolina, Maryland, California, and Pennsylvania. Eligible participants were not institutionalized, and did not require a proxy respondent at baseline. The original cohort of *N*=5,201 participants (94.7% White; 4.7% African American) was recruited between 1989 and 1990; an additional African American cohort (*N*=687) was recruited from counties in North Carolina, California, and Pennsylvania between 1992 and 1993. The 39 participants who reported their race as other than White or African American were excluded from these analyses. All CHS participants gave written informed consent, and institutional review boards of participating institutions approved all study protocols. The University of California, Los Angeles, Human Subjects Protection Committee also approved these analyses.

We hypothesized that the socioeconomic status (SES) of neighborhoods would be associated with walking and would contribute to the variation in amount of walking observed across race and gender.

Measures

Dependent variable

The number of blocks walked was assessed at baseline with the question "During the last week, how many city blocks or miles did you walk outside of your home?" Responses in miles were converted to blocks using an estimate of 12 blocks equal to 1 mile.[18,19] This questions has been validated in older White and African American men and women.

Independent variables

Neighborhood socioeconomic status

Neighborhood socioeconomic status (NSES) in the census tract for the participants' home addresses was measured using data from the 1990 US decennial Census. NSES is a composite index that has been used to describe the association between neighborhood disadvantage and health in prior CHS studies.[19-21] It was constructed by summing z-scores for six indicators that represented income (log of median household income), wealth (log of median value of housing units; percentage of households with interest, dividend or rental income), education (percentage of adults aged ≥25 years with high school education; percentage of adults aged ≥25 years with college education), and employment (percentage of employed persons in managerial or professional specialty occupations). Due to differences between Whites and African Americans in the distribution of neighborhood characteristics,[19] four race-specific NSES quartiles were constructed within each racial stratum. For each race-specific NSES variable, quartile 1 represented the highest residential NSES (most advantaged tracts) and quartile 4 the lowest residential NSES (most disadvantaged tracts).

Covariates

Guided by prior literature,[4,5,22,23] we examined individual sociodemographic and clinical characteristics that might influence walking frequency or confound the relationship between race, gender, and walking. The sociodemographic characteristics included age, gender, total combined family annual income, and education. Health behaviors reported in the interview included smoking history and alcohol use. The clinical characteristics, assessed in a standardized manner in CHS,[17] were: measured body mass index (BMI); self-reported comorbid conditions, which included arthritis, chronic obstructive pulmonary disease (COPD), and diabetes; self-reported depressive symptoms;[24] subclinical cardiovascular disease (CVD); and walking speed. Subclinical cardiovascular disease was defined as evidence of any of the following: ankle–arm index <.9; carotid stenosis >25%; internal carotid thickness >80th percentile; common carotid thickness >80th percentile; major electrocardiographic abnormalities; abnormal ejection fraction or wall motion on echocardiogram; and claudication or angina on the Rose Questionnaire.[21] Walking speed was recorded by a trained CHS team member, who measured the number of seconds required for a participant to walk 15 feet at a normal pace.

Neighborhood covariates included characteristics of street design that may promote walking, including street connectivity and median block length. Street connectivity is defined as a system of streets with multiple routes and connections serving the same origins and destinations. A highly connected street network can facilitate walking, while a grid with many cul-de-sacs or dead end streets can limit a walker's choice of routes or destinations.[25] The 1992 US Census Bureau TIGER/Line files were used to calculate street connectivity measures (alpha and gamma indices) and median block length for each census tract.[26] The alpha index uses the concept of a circuit, measuring finite, closed paths starting and ending at an intersection (or node). The alpha index is the ratio of the number of actual (observed) circuits to the maximum number of possible circuits and is equal to: (# streets - #nodes +1) / (2*# nodes – 5). The gamma index is the ratio of actual number of street segments to the maximum possible given the number of intersections and is equal to: # streets / [3*(# nodes – 2)]. Areas with streets in a grid pattern will have high values for gamma while areas with many cul-de-sacs will have low values.[27,28] The values for the alpha and gamma index range from 0-1, with higher values representing greater connectivity. Median, rather than mean, block length was chosen to reduce the possible skewing effects of highways or freeways.[29]

Analytic Sample

A total of 1,039 (18.7% of Whites and 8.7% of African Americans) participants were excluded leaving 4,849 for analyses (See Appendix Figure A for exclusion process and Appendix Table A for numbers and characteristics of those excluded).

Statistical Analysis

Mean and frequency distributions of participant characteristics were examined separately by gender and race using t-test and chi-square tests. To examine the interaction of race, gender, and NSES in relation to the number of blocks walked, we employed a generalized mixed-effects regression model with the negative binomial link function. A single model approach, rather than a stratified analysis approach, was used for comparisons by race, gender and NSES. This approach allowed us to investigate pre-specified comparisons in a single model, and to borrow strength across subgroups because of limited sample size for some groups. Although a stratified analysis is simpler for making inferences, it would not allow for pre-specified comparisons in a single model.

Variables in the full three-way interaction model included age, race, gender, education, income, smoking status, alcohol use, BMI, arthritis, any subclinical CVD, COPD, depression, diabetes status, alpha street connectivity index, race-specific NSES, three two-way interactions between race and gender, race and NSES, and gender and NSES, and the three-way interaction between race, gender and NSES. The models also included census-tract-level random effects to account for observations nested within census tracts. Adjusted blocks walked were obtained from the full regression models. Race-stratified estimated ratios were then calculated, comparing blocks walked a) between high and low SES within gender, and b) between gender within neighborhood SES level. Statistical analyses were conducted using SAS version 9.3 statistical software (SAS Institute Inc., Cary, NC).

Sensitivity Analyses

Because older adults with slower gait speeds may be less likely to walk,[30] we conducted a sensitivity analysis that included walking speed (measured by time needed to walk 15 feet) in the model. To assess the role of the other street connectivity measure (the gamma index) and median block length—we constructed separate models that included each of these measures in place of the alpha index.

Results

Clinical and Sociodemographic Characteristics of the Sample

In the sample of 4,849 study participants, 83% were White and 58% were female (Table 1). Among Whites, compared with men, women were younger, less likely to have graduated from high school, had lower incomes, were more likely to smoke or drink, had higher rates of arthritis and depression symptoms, and had lower rates of diabetes and

Table 1. Characteristics of the study population and their residential neighborhoods

	Whites		African Americans	
	Women, n=2291	**Men, n=1714**	**Women, n=527**	**Men, n=317**
Sociodemographic characteristics				
Age mean ± SD, (range: 64-100)	72.4 ± 5.5[b]	73.3 ± 5.7[b]	73.1 ± 5.6	72.5 ± 5.6
Education, n (%)[a]				
Less than high school	583 (25.5)[b]	468 (27.4)[b]	235 (44.9)	136 (43.2)
High school or GED	768 (33.6)	423 (24.8)	122 (23.3)	60 (19.1)
Some college	567 (24.8)	382 (22.4)	88 (16.8)	60 (19.1)
College graduate	212 (9.3)	214 (12.5)	30 (5.7)	23 (7.3)
Graduate/professional school	155 (6.8)	222 (13.0)	49 (9.4)	36 (11.4)
Income, n (%)[a]				
Less than $12,000	594 (25.9)[b]	222 (13.0)[b]	300 (56.9)[b]	105 (33.1)[b]
$12,000 to less than $25,000	768 (33.5)	631 (36.8)	118 (22.4)	105 (33.1)
$25,000 to less than $35,000	317 (13.8)	312 (18.2)	41 (7.8)	46 (14.5)
At least $35,000	427 (18.6)	471 (27.5)	32 (6.1)	43 (13.6)
Missing income	185 (8.1)	78 (4.6)	36 (6.8)	18 (5.7)
Health-related characteristics				
Body mass index, mean ± SD	26.3 ± 5.0	26.4 ± 3.7	29.6 ± 6.0	26.8 ± 4.3
Arthritis, n (%)[a]	1268 (56.1)[b]	748 (44.1)[b]	334 (64.1)[b]	139 (44.8)[b]
Diabetes status, n (%)[a,c]				
Normal	1739 (76.7)[b]	1154 (67.6)[b]	310 (61.4)	188 (61.01)
Impaired fasting glucose	264 (11.6)	249 (14.6)	69 (13.7)	37 (12.0)
Diabetes	271 (11.9)	303 (17.8)	126 (25.0)	83 (27.0)
Any subclinical cardiovascular disease, n (%)[a,d]	1391 (60.7)[b]	1255 (73.3)[b]	360 (68.3)[b]	244 (77.0)[b]
Chronic obstructive pulmonary disease, n (%)[a]	296 (12.9)	235 (13.7)	69 (13.1)	41 (12.9)
Clinically depressed (CES-D>8), n (%)[a]	547 (23.9)[b]	235 (13.7)[b]	171 (32.5)[b]	78 (24.7)[b]
Walking speed: seconds to walk 15 feet, mean ± SD, (range: 2-58 seconds)	6.37 ± 7.06	5.96 ± 6.77	8.85 ± 14.14[b]	6.15 ± 5.82[b]
Behaviors				
Smoking status[a]				
Never smoked	1306 (57.0)[b]	546 (31.9)[b]	308 (58.7)[b]	102 (32.3)[b]
Former smoker	696 (30.4)	995 (58.1)	146 (27.8)	151 (47.8)
Current smoker	289 (12.6)	172 (10.0)	71 (13.5)	63 (19.9)
Alcohol use[a]				
0 drinks per week	1189 (52.1)	688 (40.3)	390 (74.4)	163 (51.9)
1–7 drinks per week	878 (38.5)	705 (41.3)	122 (23.3)	107 (34.1)
>7 drinks per week	214 (9.4)	313 (18.4)	12 (2.3)	44 (14.0)
Neighborhood characteristics				
NSES, mean ± SD (range: 12.06-11.08)[a]	1.0 ± 4.7	1.2 ± 4.7	-5.3 ± 4.6	-4.8 ± 4.7
Street connectivity				
Alpha index, mean ± SD, (range: 0-.40)[a,e]	.16 ± .07	.16 ± .07	.19 ± .06	.19 ± .07
Gamma index, mean ± SD, (range: 0-.60)[a,f]	.44 ± .04	.44 ± .04	.47 ± .04	.46 ± .04
Block length (median within census tract), mean ± SD, (range: 986-18480 ft)[a]	2460 ± 1086	2482 ± 1213	2038 ± 605	2027 ± 592
Main outcome				
Blocks walked in the last 30 days				
Lowest quartile NSES (most disadvantaged)[a,b]	28.95 (1.84)	46.36 (3.34)	13.60 (1.92)	41.51 (7.30)
Highest quartile NSES (least disadvantaged)[a,b]	44.06 (3.00)	60.38 (4.44)	24.10 (3.02)	35.63 (5.12)

NSES, Neighborhood socioeconomic status; CES-D, Center for Epidemiologic Studies Depression Scale

a. Significant differences between Whites and African Americans (P<.05)

b. Significant difference between women and men within whites or African Americans (P<.05)

c. Impaired fasting glucose = Fasting blood glucose (FBG) 100-126 mm/dL. Diabetes = FBG>126 mm/dL or diabetes diagnosis and diabetes medication.

d. Ankle-arm index ≤.9, carotid stenosis >25%, internal carotid thickness >80th percentile, major EKG abnormalities, abnormal ejection fraction or wall motion on echocardiogram, or claudication or angina on Rose Questionnaire.

e. The alpha index is the ratio of the actual number of complete loops to the maximum number of possible loops given the number of intersections. Values range from 0-1; higher values represent higher street connectivity.

f. The gamma index is the ratio of actual number street segments to maximum possible given the number of intersections. Values range from 0-1; higher values represent higher street connectivity.

Table 2. Estimated mean (SD) and ratios (95% CI) for comparisons of interest in Whites for gender and neighborhood socioeconomic status (NSES) associations with number of blocks walked within the prior week[a]

Whites	Estimated N of Blocks Walked (SE)		Estimated Ratio	
	Lowest NSES	Highest NSES	Highest v. Lowest NSES (95% CI)	P
Female	26.1 (1.88)	34.5 (2.50)	.76 (.63, .91)	.0027
Male	42.8 (3.21)	49.3 (3.76)	.87 (.71, 1.06)	.1600
Estimated ratio				
Male vs female (95% CI)	1.64 (1.38, 1.94)	1.43 (1.21, 1.68)		
P	<.0001	<.0001		

NSES, neighborhood socioeconomic status; CI, confidence interval
a. Model adjusted for age, gender, income, education, body mass index, comorbid conditions, smoking status, alcohol use, alpha street connectivity index, and interaction terms.

subclinical CVD. Among African Americans, compared with men, women had lower incomes and were less likely to smoke or drink. They also had higher mean BMI, higher rates of arthritis and depression symptoms, yet lower rates of subclinical CVD. Compared with Whites, African Americans had less educational attainment, lower income, lower alcohol use, higher mean BMI, and higher rates of arthritis (among women only), diabetes, subclinical CVD, current smoking, and depressive symptoms. African Americans walked a distance of 15 feet more slowly than their White counterparts. African American women walked significantly slower than African American men, but among Whites, the gender difference did not reach statistical significance.

Neighborhood Characteristics and Blocks Walked

In unadjusted analyses, men walked more blocks than women and Whites walked more than African Americans. Neighborhood characteristics did not differ by gender within each racial/ethnic group. However, African Americans lived in neighborhoods with lower NSES and higher alpha and gamma indices and shorter block lengths than Whites (Table 1).

In the fully adjusted models, the 3-way interaction was significant (*P*=.03), indicating that gender effects differ across race groups and NSES quartiles; one of the two-way interactions (NSES quartile-by- gender) was also found to be significant (*P*=.01). White women whose neighborhoods were in the lowest NSES quartile walked 24% fewer blocks per week than White women from areas in the highest NSES quartile (*P*=.003; Table 2); the difference observed for White men in the lowest compared with the highest NSES quartile was not significant. African American women in the lowest NSES quartile walked 40% fewer blocks than women in the highest NSES quartile (*P*=.006; Table 3). The association did not differ for African American male residents of neighborhoods in the low-

Table 3. Estimated mean (SE) and ratios (95% CI) for comparisons of interest in African Americans for gender and neighborhood socioeconomic status (NSES) associations with number of blocks walked within the prior week[a]

African Americans	Estimated N of Blocks Walked (SE)		Estimated Ratio	
	Lowest NSES	Highest NSES	Highest vs Lowest NSES (95% CI)	P
Female	14.5 (2.07)	24.2 (3.13)	.60 (.42, .86)	.0058
Male	42.9 (7.42)	34.8 (5.16)	1.23 (.80, 1.92)	.3532
Estimated Ratio:				
Male vs female (95% CI)	2.96 (1.98, 4.42)	1.43 (.99, 2.08)		
P	<.0001	.0567		

NSES, neighborhood socioeconomic status; CI, confidence interval
a. Model adjusted for age, gender, income, education, body mass index, comorbid conditions, smoking status, alcohol use, alpha street connectivity index, and interaction terms.

est versus highest NSES quartiles.

For Whites who resided in neighborhoods in the lowest NSES quartile, men walked 64% more blocks per week than women (*P*<.001; Table 2), but 43% more blocks in the highest NSES quartile (*P*<.001). Among residents of neighborhoods in the lowest NSES quartile, African American men walked 196% more blocks than women (*P*<.001; Table 3). In the highest SES neighborhoods, the difference was not statistically significant. The gender difference in the lowest NSES quartile was greater for African Americans (ratio=2.96) than for Whites (ratio=1.64; not shown).

Adjusted blocks walked are presented in Figure 1. Residence in a neighborhood with a lower NSES quartile is associated with fewer blocks walked for both African American and White women. NSES was not significantly associated with blocks walked for White men. At each quartile of NSES, White men walked significantly more blocks than White women. Among African Americans, the gender difference was found to be significant only in neighborhoods in the two lowest NSES quartiles. Among women, African Americans walked fewer blocks on average than Whites for residents of the highest and lowest NSES quartiles. This racial difference did not extend to men in the cohort.

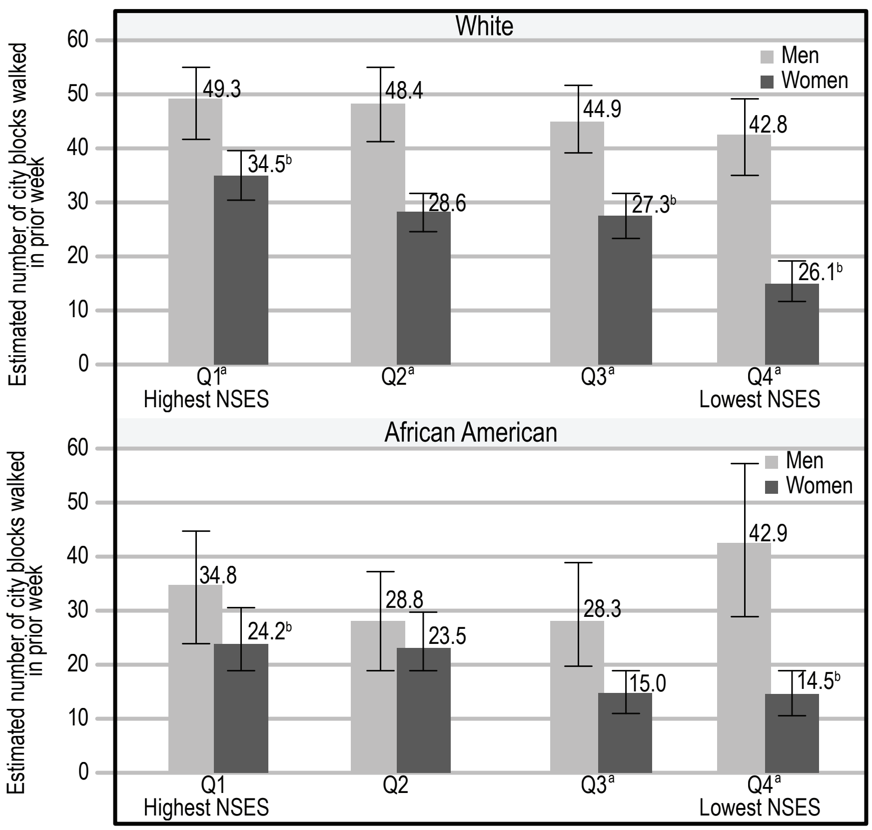

Figure 1. Estimated blocks walked by men and women in each neighborhood socioeconomic status (NSES) quartile stratified by race

a. Within the NSES quartile, the estimated difference in blocks walked between men and women is significant (P<.05).

b. For White women and African American women, the estimated blocks walked in the highest NSES quartiles is significantly different from estimated blocks walked in the other NSES quartiles (P<.05). There are no other significant differences across NSES quartiles for men.

Error bars represent the 95% confidence interval around the estimated blocks walked. Estimated blocks walked are adjusted for age, income, education, body mass index, arthritis, any subclinical cardiovascular disease, chronic obstructive pulmonary disease, depression, and diabetic status, smoking and alcohol use and alpha street connectivity index. We found no significant change in these results when models were also adjusted separately for other street connectivity specifically, the gamma index and median block length.

Sensitivity Analyses

Inclusion of walking speed in the model and substituting gamma index and median block length for the alpha index did not alter the results of any of these analyses (Data not shown).

Discussion

Our study found substantial variation by race and gender in the independent association between neighborhood disadvantage and blocks walked among community-dwelling older adults. Even after adjustment for individual socioeconomic, behavioral, and clinical factors that might influence walking, lower NSES was consistently associated with fewer blocks walked by older women, especially African American women. For White men, the association between NSES and blocks walked appeared to be minimal. In contrast to all the other groups, among African American men, residing in a neighborhood in the lowest NSES quartile was strongly associated with more blocks walked. These findings support our hypothesis that NSES is associated with walking, but the relationships appear to differ for African Americans and Whites and for men and women.[31]

The associations between walking and NSES did not change apprecia-

…lower NSES was consistently associated with fewer blocks walked by older women, especially African American women.

bly with adjustment for street connectivity (either the alpha index or the gamma index) or median block length. In other studies, measures of the physical environment, such as street connectivity or block length, have been associated with walking among younger Whites[29] and older White women.[23] In contrast, studies of African Americans[32] have found stronger associations between walking and neighborhood social characteristics, such as perceived safety and social cohesion. Prior research also suggests that among women, features such as the aesthetic quality of a community, perceived safety, and social relationships are associated with walking. The findings from our study suggest that interventions to enhance walking among diverse groups of older adults will require intervening on individual- and community-level factors and that the interventions needed will differ by race and gender.

Study Limitations

This study has some potential limitations. First, these analyses are older cross-sectional data and do not indicate causal relationships between neighborhood features and blocks walked. The single model approach used assumes that the effects of other covariates are race-, gender-, and race by gender invariant. We found few differences when we ran stratified models, so opted to maintain the single model. Additional work using more recent and/or longitudinal data needs to be done to examine changes over time in patterns of walking by neighborhood and assess whether these trajectories differ by race or gender. Another potential limitation is that the majority of the African American participants were enrolled nearly three years after the initial cohort, secular trends may account for the lower rates of walking among African Americans. However, we found similar walking patterns among the African American participants in the first and second cohorts, suggesting that secular changes in this group are not responsible for the observed differences. Third, because of the relatively small number of African American men in the study, the high number of blocks walked by African American men in the lowest NSES quartile may have had a disproportionate influence on the observed results. The NSES may be an inadequate proxy for neighborhood features, such as safety, aesthetics, presence and condition of sidewalks, and others, which may influence walking patterns in some of the subgroups examined.[20] The number of city blocks per mile is not uniform across neighborhoods; however, we obtained similar results in the sensitivity analysis that adjusted for median block length. There may be unmeasured individual and neighborhood mediators or moderators of the relationship between NSES and walking patterns, such as functional status, perceived safety, weather conditions, or sidewalk conditions. These variables could not be included in these analyses. Finally, rates of walking for transportation vs walking for recreation may vary by race[33] and gender,[34] but these data did not include purpose and may have limited generalizability to the older adults we studied.

Conclusion

In summary, our study suggests that gender is a stronger differentiator of walking activity for African Americans than for Whites in low SES neighborhoods but had similar effects for both African Americans and Whites in high SES neighborhoods. NSES was not associated with differences in walking for either White or African American men. Further study is needed to understand racial and gender differences in the relationship between walking and potentially modifiable socioeconomic characteristics of neighborhoods and how best to inform policies and community interventions to encourage and sustain walking among older adults in diverse communities.

Acknowledgments

Conflict of Interest
No conflicts of interest to report.

Author Contributions
Research concept and design: Yan, Katz, Escarce, Longstreth, Merkin, Brown. Acquisition of data: Longstreth. Data analysis and interpretation: Yan, Liang, Vassar, Katz, Escarce, Merkin, Brown. Manuscript draft: Yan, Liang, Vassar. Statistical expertise: Yan, Liang, Escarce, Merkin. Acquisition of fund-

ing: Vassar, Brown. Administrative: Katz, Brown. Supervision: Liang, Vassar, Escarce, Longstreth, Brown

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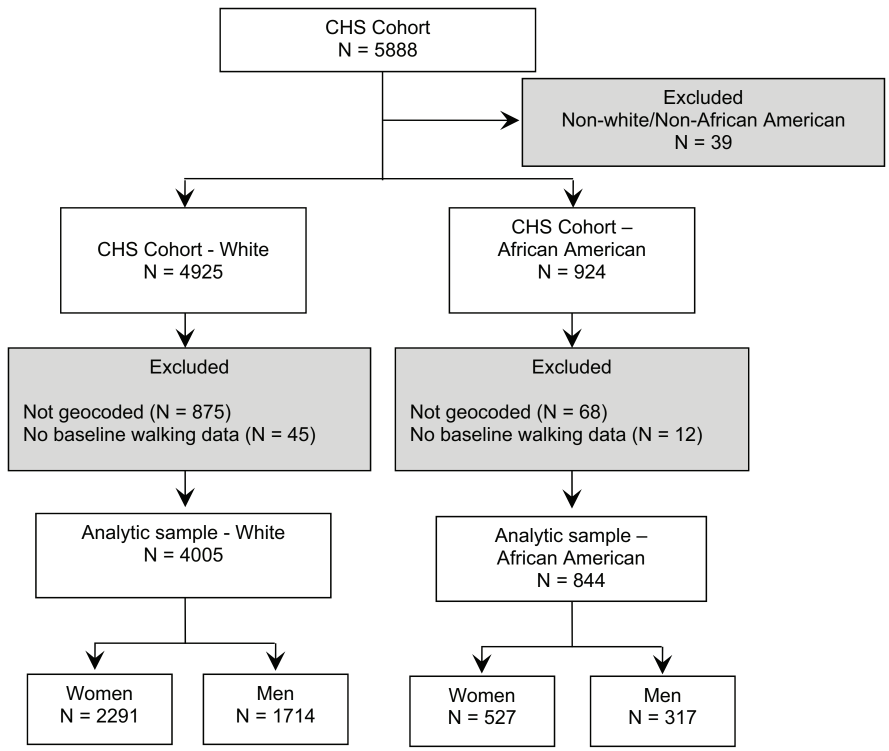
Appendix



Appendix Figure A. Exclusion process for analytic sample

Appendix

Appendix Table. Characteristics of participants excluded from analysis [a]

	Excluded from analysis, n=1039	Included in analysis, n=4849	P
Sociodemographic characteristics			
Age, mean ± SD, range: 64 to 100	73.0 ± 5.6	72.8 ± 5.6	.30
Education, n (%)			.002
Less than high school	310 (29.9)	1422 (29.4)	
High school or GED	247 (23.8)	1373 (28.4)	
Some college	227 (21.9)	1097 (22.7)	
College graduate	129 (12.4)	479 (9.9)	
Graduate/professional school	125 (12.0)	462 (9.6)	
Income, n (%)			<.0001
<$12,000	219 (24.0)	1221 (25.2)	
$12,000 to less than $25,000	310 (29.8)	1622 (33.5)	
$25,000 to less than $35,000	131 (12.6)	716 (14.8)	
At least $35,000	286 (27.5)	973 (20.1)	
Missing income	63 (6.1)	317 (6.5)	
Health-related characteristics			
Body mass index, mean ± SD	26.6 ± 4.5	26.7 ± 4.8	.39
Arthritis, n (%)	536 (51.9)	2489 (52.0)	.94
Diabetic status, n (%)[b]			.02
Normal	693 (67.2)	3391 (70.8)	
Impaired fasting glucose	165 (16.0)	619 (12.9)	
Diabetes	173 (16.8)	783 (16.3)	
Any subclinical cardiovascular disease, n (%)[c]	735 (70.7)	3250 (67.0)	.02
Chronic obstructive pulmonary disease, n (%)	110 (10.6)	641 (13.2)	.02
Clinically depressed (CES-D>8), n (%)	225 (21.7)	1031 (21.3)	.79
Walking speed: seconds to walk 15 feet, mean ± SD, (range: 2 to 58 seconds)	6.48 ± 8.03	6.00 ± 5.57	.07
Behaviors			
Smoking status			.07
Never smoked	476 (45.9)	2262 (46.7)	
Former smoker	456 (44.0)	1988 (41.0)	
Current smoker	105 (10.1)	595 (12.3)	
Alcohol use			.55
0 drinks per week	501 (48.5)	2430 (50.4)	
1–7 drinks per week	403 (39.0)	1812 (37.6)	
>7 drinks per week	129 (14.5)	583 (12.1)	
Walking patterns			
Number of city blocks walked in the prior week, mean ± SD, (range: 0 to 300)	37.2 ± 53.3	39.3 ± 55.3	.28

NSES, Neighborhood socioeconomic status; CES-D, Center for Epidemiologic Studies Depression Scale.

a. Excluded: unable to geocode, ≥ 30% of census tract resides in group quarters, stroke prior to baseline, TIA prior to baseline, other race/ethnicity.

b. Diabetes categories: Impaired fasting glucose = Fasting blood glucose (FBG) 100-126 mm/dL. Diabetes = FBG126 mm/dL or diabetes diagnosis and diabetes medication.

c. Ankle-arm index ≤.9, carotid stenosis >25%, internal carotid thickness >80th percentile, Major EKG abnormalities, abnormal ejection fraction or wall motion on echocardiogram, or claudication or angina on Rose Questionnaire.

d. The alpha index is the ratio of the actual number of complete loops to the maximum number of possible loops given the number of intersections. Values range from 0-1; higher values represent higher street connectivity.

e. The gamma index is the ratio of actual number street segments to maximum possible given the number of intersections. Values range from 0-1; higher values represent higher street connectivity.