

RESEARCH BRIEF #111

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Cognitive Functioning is Higher among Older Adults in Walkable Neighborhoods that Have Low Economic Disadvantage

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KEY FINDINGS

- Cognitive function is higher among older adults (age 65+) who live in neighborhoods that are more walkable and have lower levels of concentrated disadvantage.
- The education and income gaps in cognitive function widen when neighborhood walkability deteriorates.
- Lower levels of neighborhood concentrated disadvantage are associated with smaller education and income gaps in cognitive function.
- Communities can help improve older adults' cognitive function by prioritizing pedestrian-friendly infrastructure and promoting opportunities for cognitive, social, and/or physical stimulation.

Living in neighborhoods with poor built and social environments, such as low walkability and high concentrations of low-income populations, is associated with low levels of cognitive function among older adults.¹⁻³ However, it remains unclear whether older adults with low socioeconomic status suffer more from poor residential environments than their counterparts with high socioeconomic status.⁴⁻⁵

This brief summarizes findings from our recent [study](#)⁶ that aims to understand how older adults' (age 65+) exposures to residential neighborhood environments – specifically walkability and concentrated socioeconomic disadvantage (percent poverty, female headed households, and adults without a 4-year college degree) – are associated with their cognitive function between 2010 and 2018. We also examined how these

associations vary by older adults' education level (no bachelor's degree/at least a bachelor's degree) and household income level (low/high).

Low-Education and Low-Income Older Adults' Cognitive Function is More Sensitive to Poor Neighborhood Environments

Older adults without a bachelor's degree or with low income consistently have lower cognitive function scores than those with at least a bachelor's degree or high income. Moreover, among older adults without a bachelor's degree (Figure 1A), the estimated cognitive function score increases by 0.6 between the least walkable neighborhoods (14.25) and the most walkable neighborhoods (14.85). We found a similar difference in cognitive function among low-income older adults (Figure 1B) in the least walkable neighborhoods (14.79) versus those in the most walkable neighborhoods (15.38). Additionally, low-education older adults' are particularly disadvantaged when they live in a neighborhood with concentrated disadvantage (i.e., high proportions of populations with low education or in poverty), as the estimated cognitive function score is 12.53 when living in high concentrated disadvantage neighborhoods, compared to 14.96 in low concentrated disadvantage neighborhoods (Figure 1C).

By contrast, cognitive function scores among high-education and high-income older adults do not vary greatly across neighborhood walkability or concentrated disadvantage. For example, the estimated cognitive function score is 17.17 for high-education older adults living in the most walkable neighborhoods, which is only 0.14 higher than that for high-education older adults living in the least walkable neighborhoods (Figure 1A). Similar patterns are observed for high-income older adults across different levels of walkability.

Education and Income Gaps in Cognitive Function Widen with Poor Neighborhood Features

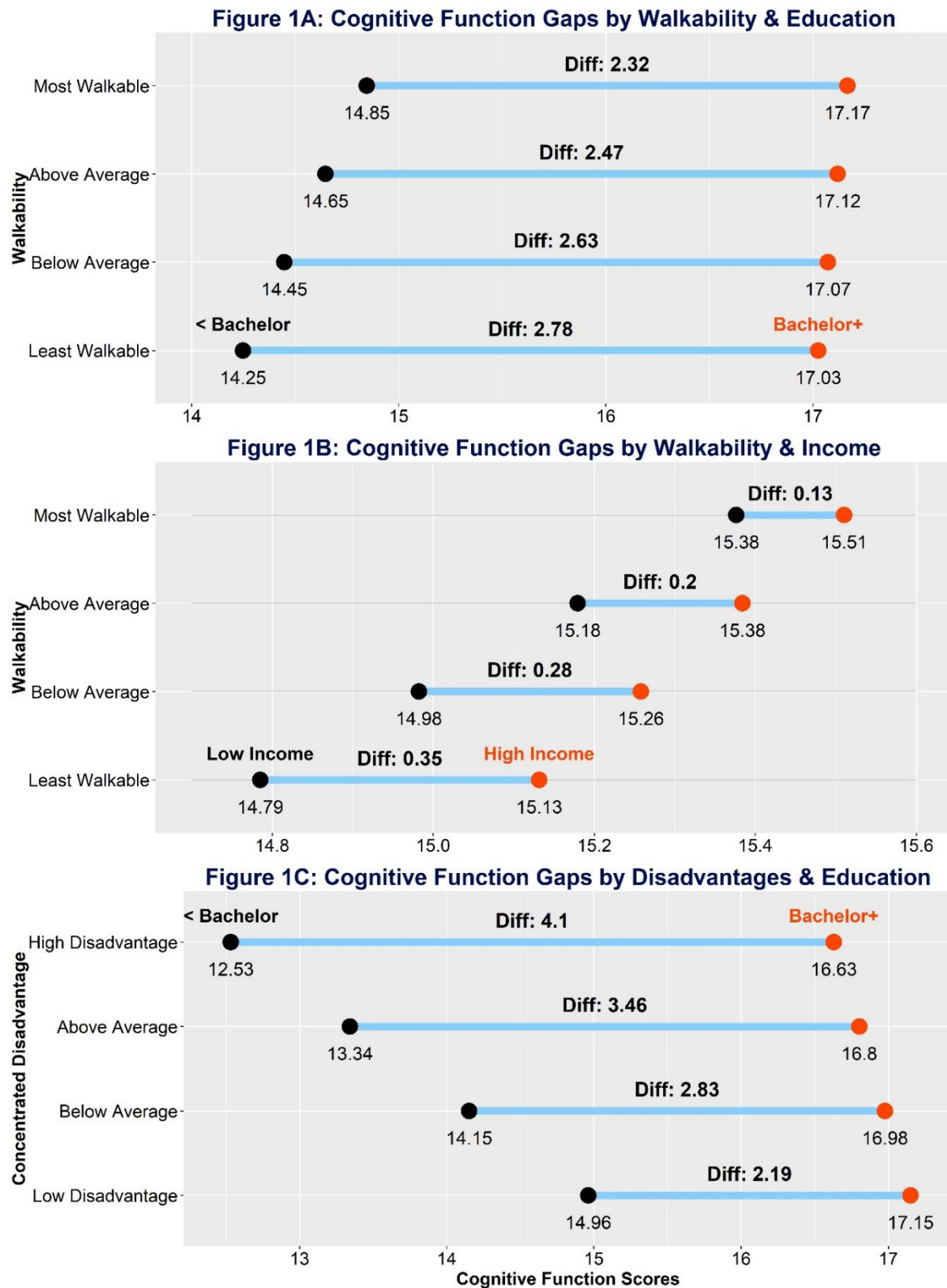
The gaps in cognitive function scores between high-education and low-education older adults widen with neighborhood walkability and concentrated disadvantage. Specifically, the gap increases from 2.32 in the most walkable neighborhoods to 2.78 in the least walkable neighborhoods (Figure 1A). The difference in estimated cognitive function scores between low- and high-education older adults (Figure 1C) is 4.1 in high concentrated disadvantage neighborhoods, almost 2 units larger than the difference in low concentrated disadvantage neighborhoods (i.e., 2.19). With respect to the gap between low- and high-income older adults, the estimated difference is 0.13 in the most walkable neighborhoods, whereas it increases to 0.35 in the least walkable neighborhoods.

Older adults' low socioeconomic status is related to limited cognitive function that could have otherwise been improved through education or spendings on cognition-stimulating activities, such as crossword puzzles, chess, and card games. Opportunities for cognitive stimulation are limited for individuals living in neighborhoods with poor built and social environments. Low-education or low-income older adults encounter double jeopardy with respect to their cognitive function, leading to increasing education and income gaps in cognitive function scores.

How Can Communities Aid in Improving Individuals' Cognitive Function?

Communities should prioritize pedestrian-friendly infrastructure, such as well-maintained crosswalks or pathways, and promote opportunities (e.g., community

gardens) for cognitive, social, and/or physical stimulation, all of which contribute to individual cognitive function.



Data and Methods

The data on older adults are from the 2010-2018 Health and Retirement Study (HRS). Neighborhood-level data are from the 2008-2012 American Community Survey (ACS) and the United States Environmental Protection Agency (EPA). The sample included HRS respondents who met the following criteria: at least 65 years old, community-dwelling, no dementia at baseline, and did not relocate during the study period. This brief focuses on two neighborhood features: walkability and concentrated disadvantage. Walkability is a composite index considering the following four indicators: intersection density, distance between population centroid to the nearest transit stop, mixed employment types (e.g., office and retail) index, and mixed employment and occupied housing index. Concentrated disadvantage is a score measuring the concentration of the following groups: impoverished population, female-headed households, and population without a high school degree. For more details about the data and methods, refer to the published study.⁶

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