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Neighborhood Determinants of Health as a Composite Index: Comparing Area-Based Indices in Public Health Research

Original Article Published: 06 December 2025

Volume 102, pages 1163–1174, (2025) [Cite this article](#)[Save article](#)[View saved research](#)[Journal of Urban Health](#)[Aims and scope](#)[Submit manuscript](#)[Jenny Wagner](#) , [Noli Brazil](#), [Javier A. Morla Estrada](#) & [Kayla Lujan](#) [375 Accesses](#)  [1 Citation](#) [Explore all metrics](#) →

Abstract

Neighborhood conditions significantly impact health and well-being, leading public health agencies to focus interventions on disadvantaged areas. Yet, a growing number of composite indices have been developed to measure neighborhood opportunity, deprivation, or vulnerability, and little is known about how they compare in relation to health. Our study compares 13 composite indices of neighborhood conditions commonly used in public health

research. Using data for over 57,000 US census tracts, we evaluate correlations among indices and assess their associations with four health outcomes—poor mental health, diabetes, smoking, and life expectancy—relative to the poverty rate, a standard single-variable measure of neighborhood deprivation. We used spatial regression models to account for autocorrelation and ordinary least squares regression to compare explanatory power across measures. While indices correlate with one another and with poverty, their associations with health outcomes and explanatory power vary considerably. Some indices exhibit stronger associations with health compared to poverty, suggesting they may offer more nuanced insights into neighborhood health inequities. Conversely, other indices explained less variation in health outcomes, questioning their utility in guiding interventions. Our findings underscore that indices are not interchangeable and highlight the need for careful selection of indices based on specific public health contexts and outcomes. Our study suggests simpler measures like poverty may, in some cases, be equally or more effective while offering a more interpretable and practical benchmark for targeting resources.

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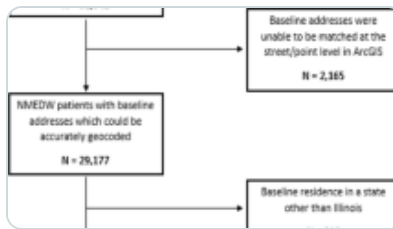
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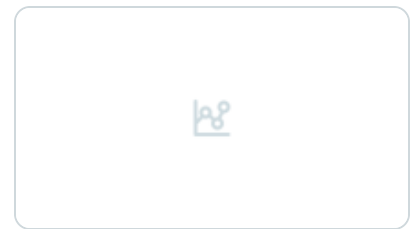
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Data Availability

All data used in this study are publicly available from the sources referenced in the manuscript and supplementary material. Data files are available from the authors upon reasonable request.

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Acknowledgements

The authors received no specific grant or financial support for the research, authorship, or publication of this article. The authors have no acknowledgments to report.

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Cite this article

Wagner, J., Brazil, N., Estrada, J. .M. *et al.* Neighborhood Determinants of Health as a Composite Index: Comparing Area-Based Indices in Public Health Research. *J Urban Health* **102**, 1163–1174 (2025). <https://doi.org/10.1007/s11524-025-01028-0>

Received

17 May 2025

Accepted

24 September 2025

Published

06 December 2025

Version of record

06 December 2025

Issue date

December 2025

DOI

<https://doi.org/10.1007/s11524-025-01028-0>

Keywords

[Social determinants of health](#)

[Neighborhood](#)

[Socioeconomic disadvantage](#)

[Public health](#)

