

An interplay between social and structural determinants of health and stress in breast cancer

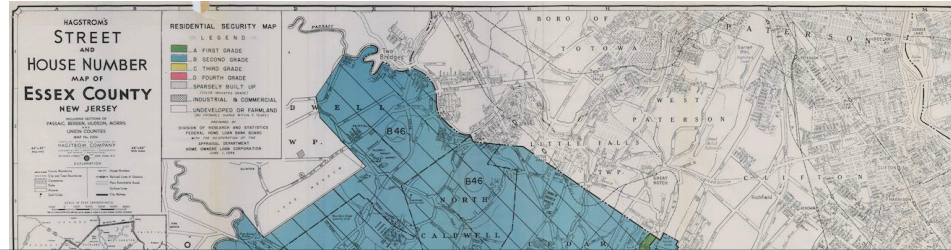
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Biological Effectors of Social Determinants of Health in Cancer: Identification and Mitigation
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Residence in areas with increasing physical disorder – a measure of neighborhood disinvestment – is significantly associated with shorter breast cancer survival

1930s Home Owners' Loan Corporation (HOLC) Mortgage Security Redlining Map of Essex County, NJ



**Most
desirable
(Best)**

Residence in neighborhoods where there was marked lending discrimination by race has an inequitable impact on breast cancer outcomes.



**Hazardous
(Worst)**

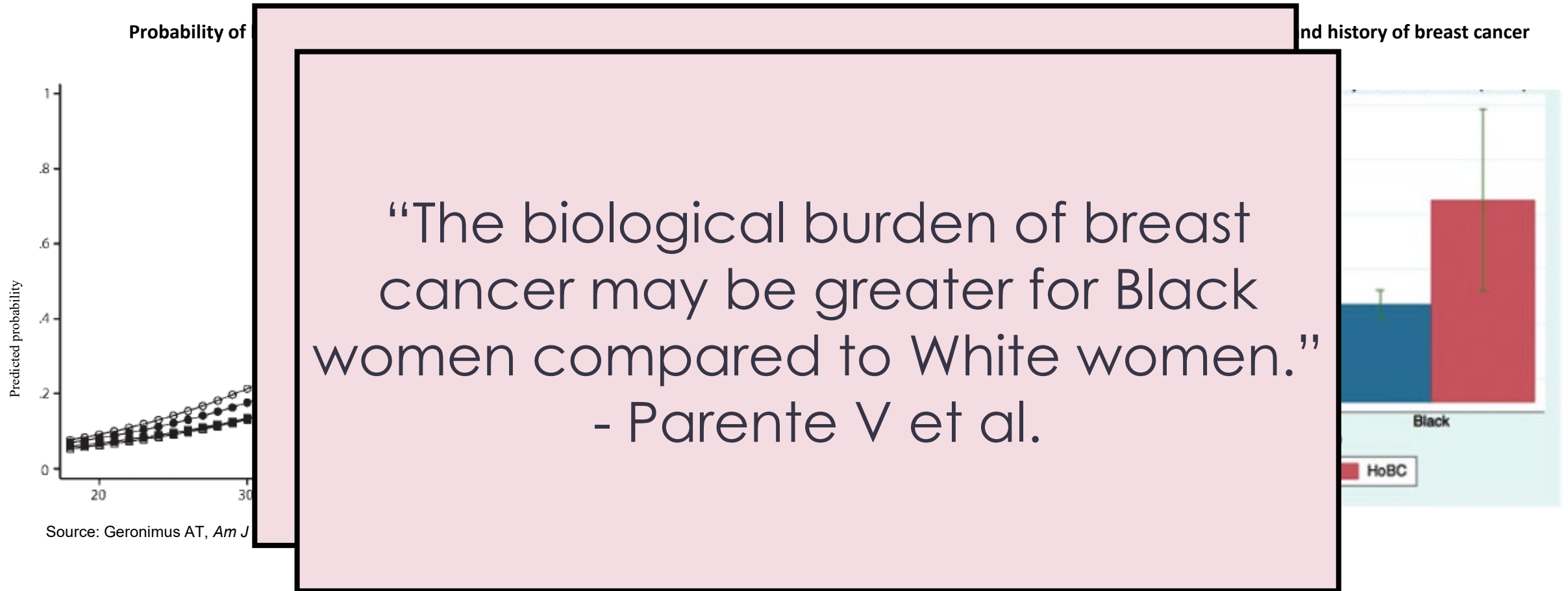
SOURCE: The Digital Scholarship Lab, "Mapping Inequality: Redlining in New Deal America," <https://dsl.richmond.edu/panorama/redlining/#loc=10/40.793/-74.629&city=essex-co.-nj&area=A30>

Cumulative disadvantage is linked to increased risk of chronic physiologic stress ('allostatic load')

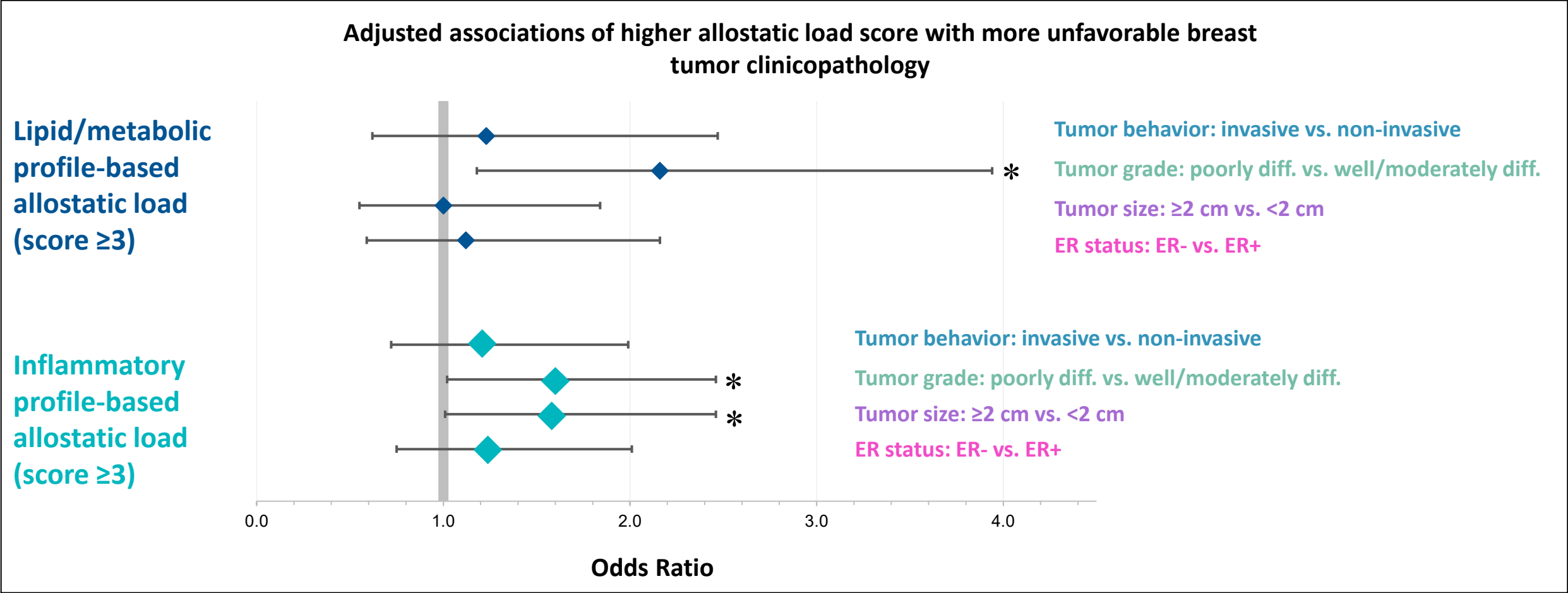
- Allostatic load is an early marker of increased morbidity and mortality
- *Weathering Hypothesis*
 - The health of Black women may begin to deteriorate in early adulthood as a physical consequence of cumulative socioeconomic disadvantage
- Evidence shows disparities in allostatic load by race, ethnicity, and SES as early as childhood and adolescence



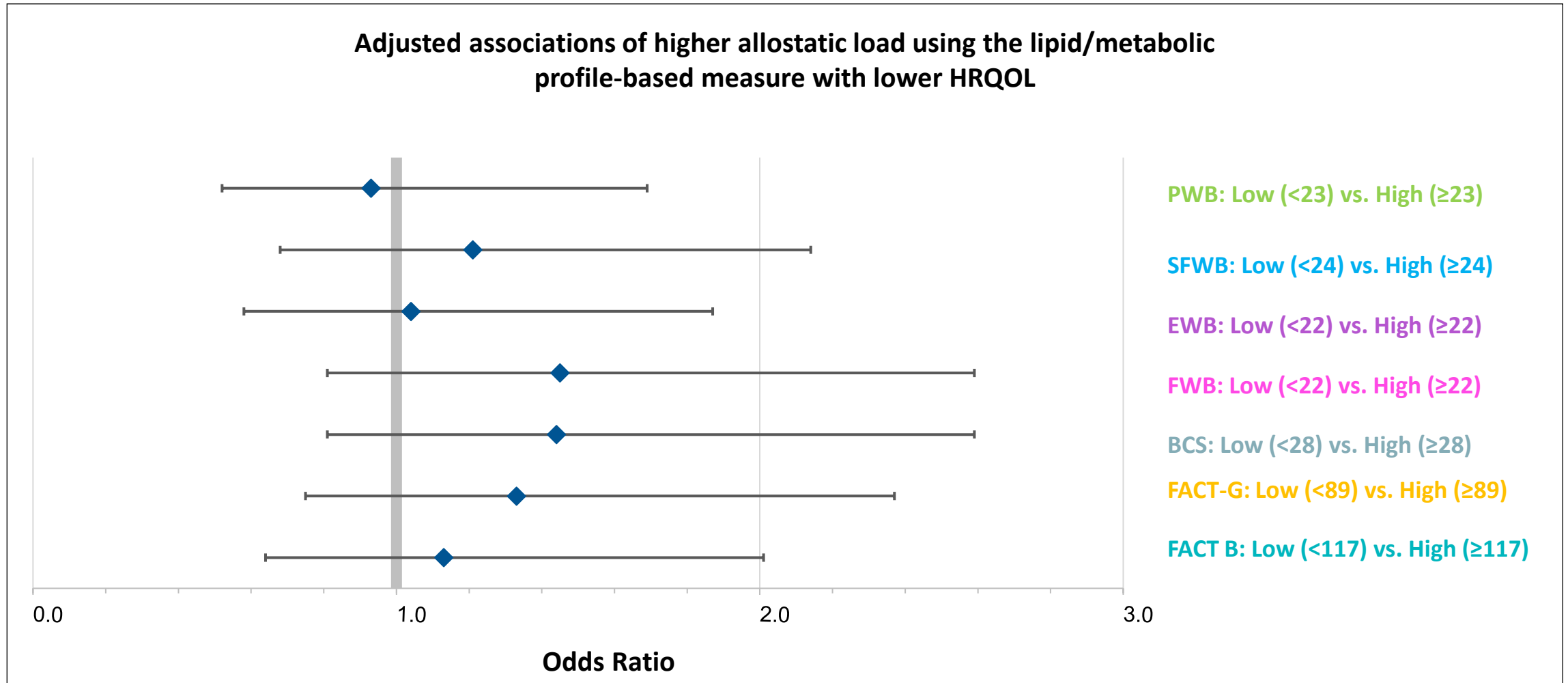
Allostatic load scores are higher in Black women (and men) and associated with breast cancer



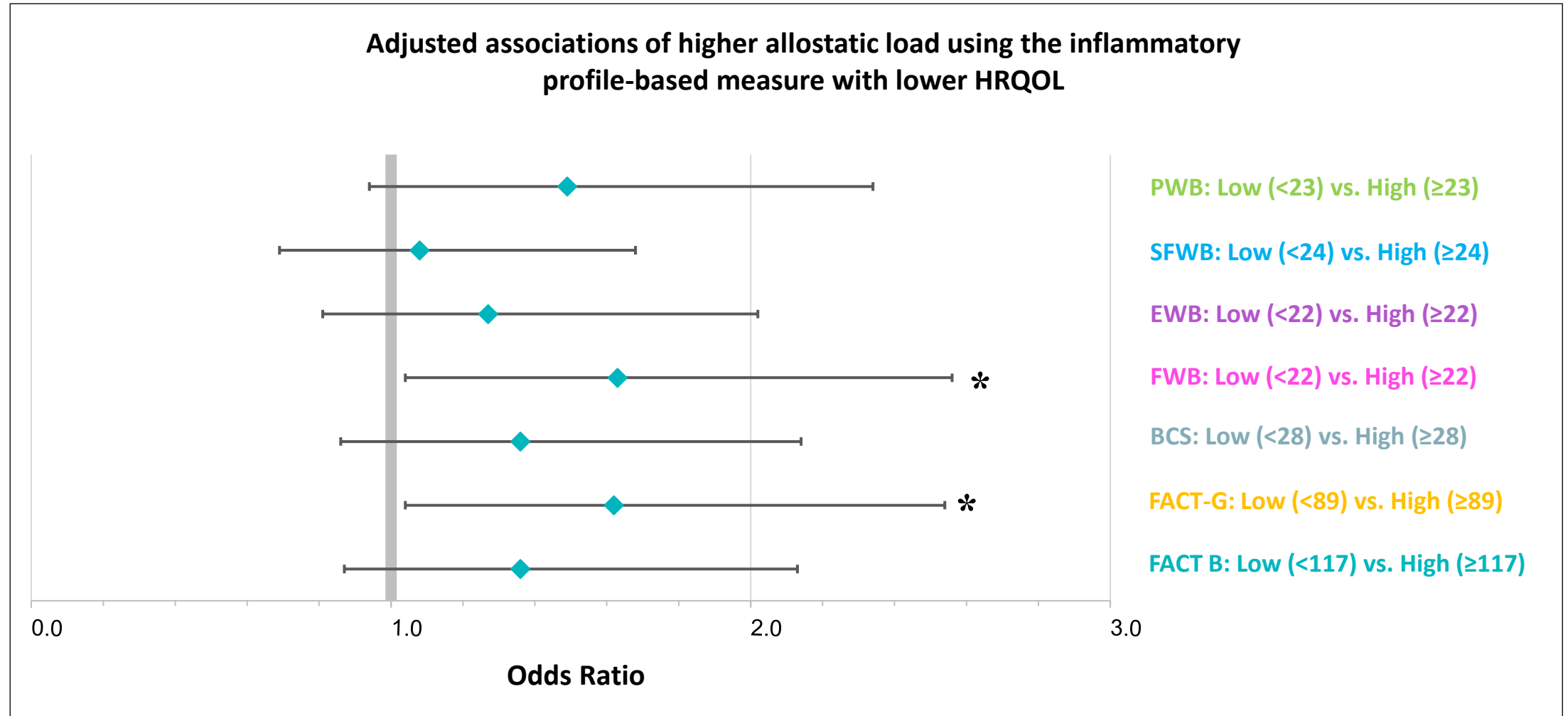
Associations between pre-diagnostic allostatic load and breast tumor characteristics



Lipid/metabolic profile-based measure of allostatic load and HRQOL 2 years post-diagnosis



Inflammatory profile-based measure of allostatic load and HRQOL 2 years post-diagnosis



Emerging evidence supports a prospective association between allostatic load scores with breast cancer incidence

> [Breast Cancer Res.](#) 2023 Dec 19;25(1):155. doi: 10.1186/s13058-023-01754-w.

Association between allostatic load and breast cancer risk: a cohort study

Yufan Guan ¹, Jie Shen ², Juan Lu ¹, Bernard F Fuemmeler ¹, Lisa S Shock ³, Hua Zhao ⁴

Affiliations + expand

PMID: 38115125 PMCID: [PMC10729373](#) DOI: [10.1186/s13058-023-01754-w](#)

> [Prev Med.](#) 2024 Jan;178:107817. doi: 10.1016/j.ypmed.2023.107817. Epub 2023 Dec 12.

Allostatic load and risk of invasive breast cancer among postmenopausal women in the U.S

Fengge Wang ¹, Meghan B Skiba ², Shawna Follis ³, Nianjun Liu ⁴, Aurelian Bidulescu ⁴, Anirban K Mitra ⁵, Charles P Mouton ⁶, Lihong Qi ⁷, Juhua Luo ⁴

Affiliations + expand

PMID: 38097139 DOI: [10.1016/j.ypmed.2023.107817](#)

The risk of BC increased by 5%
for each one-unit increase in
allostatic load score
(HR 1.05, 95% CI: 1.04, 1.07)

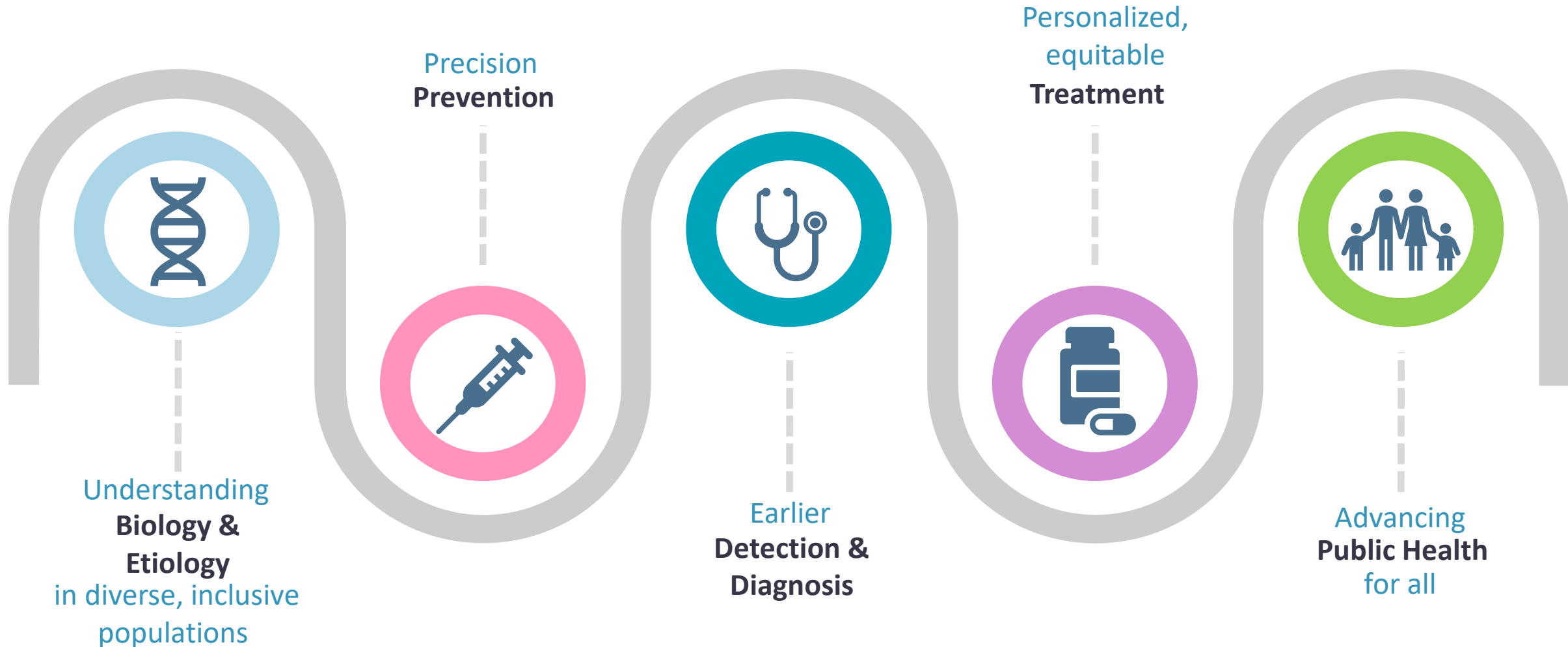
The risk of BC was increased by
36% among individuals with higher
allostatic load scores
(HR_{T3 vs T1} = 1.36, 95% CI: 1.20, 1.54)

New research questions

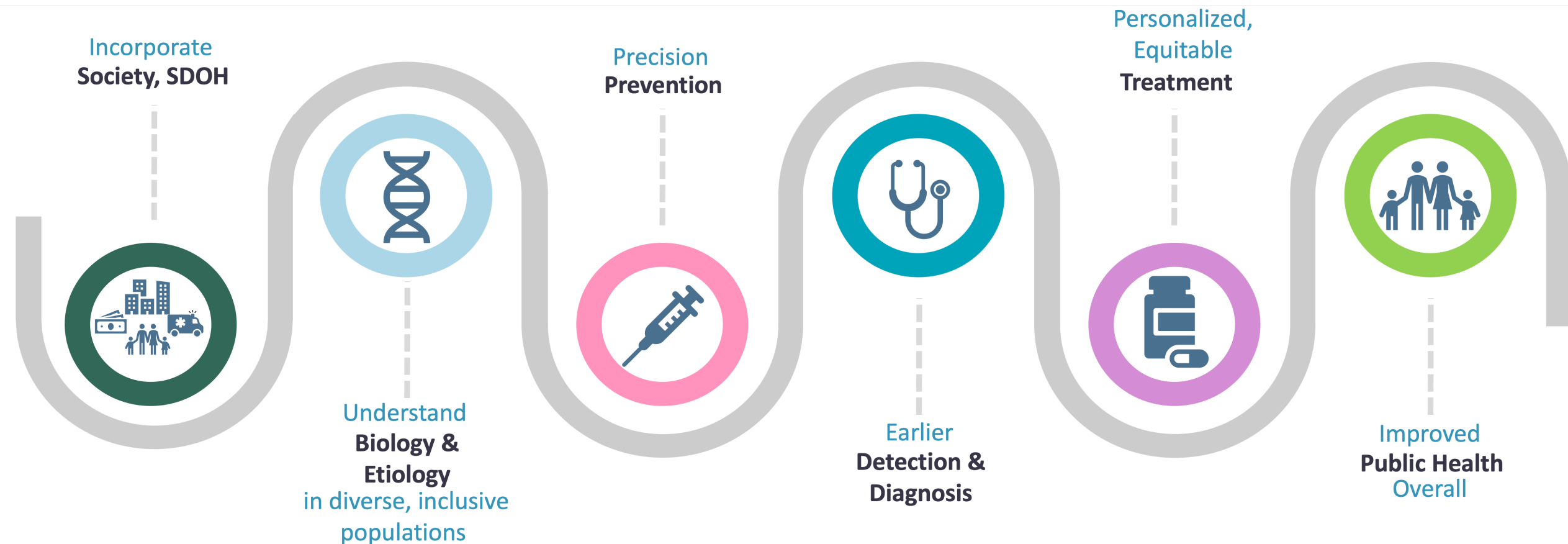


- Can we develop a standardized method for allostatic load score computation for cancer epidemiology studies?
 - Can we validate that method to advance the understanding of the link between allostatic load and cancer inequities?
- What is the combined impact of allostatic load and neighborhood context on breast cancer?
 - Do these associations underlie the sociobiologic/biosocial/biopsychosocial mechanisms of persistent cancer inequities?

Addressing breast cancer inequities

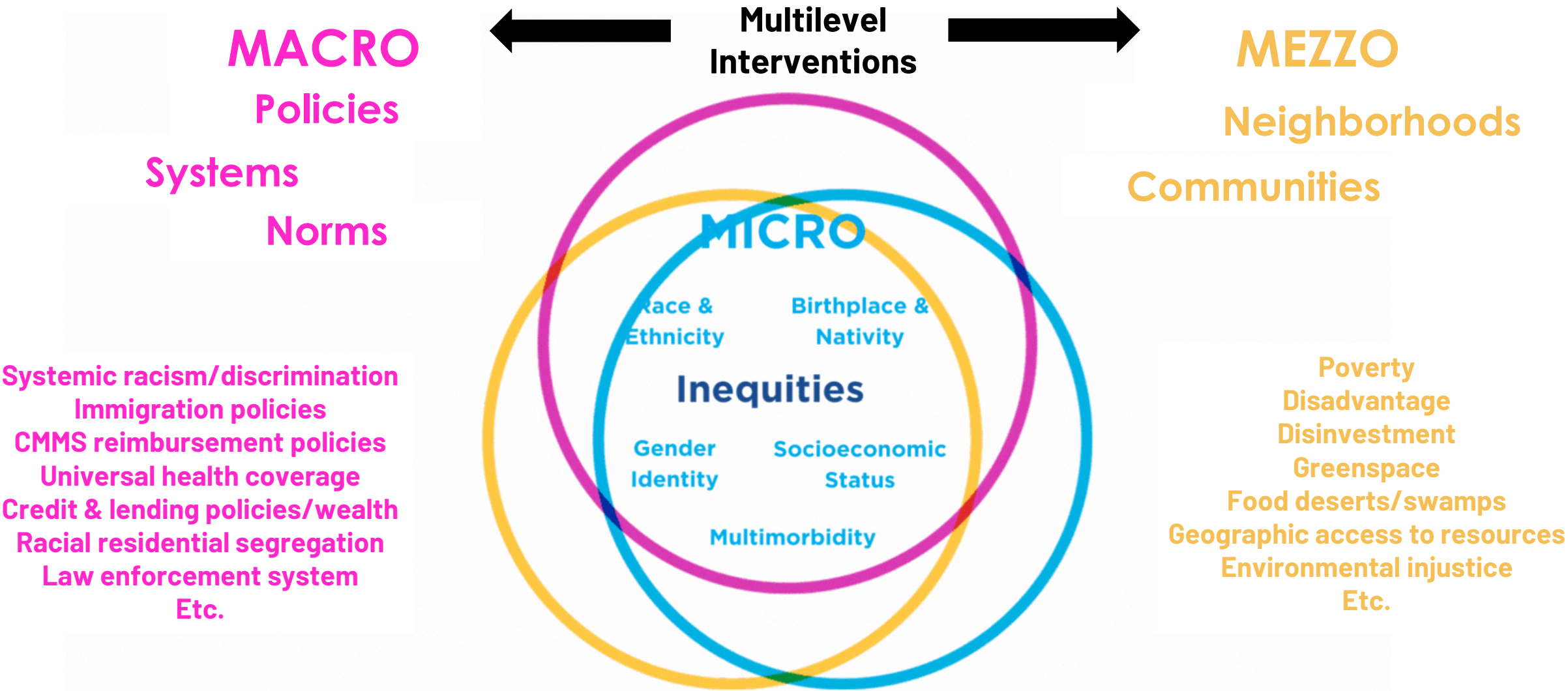


Addressing breast cancer inequities



**Warnecke Transdisciplinary Model of Population Health and Disparities
for a cells to society or society to cells approach**

Multilevel, multidimensional SDOH contributors to breast cancer inequities



Acknowledgments



WCHS/WCHFS Collaborators

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THANK YOU!



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**[www.publichealth.columbia.edu/
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