

# Social Determinants of Health & Risk Reduction: New Approach to Long-Standing Challenges

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## Social Determinants of Health (Simplified)



EDUCATION



INCOME



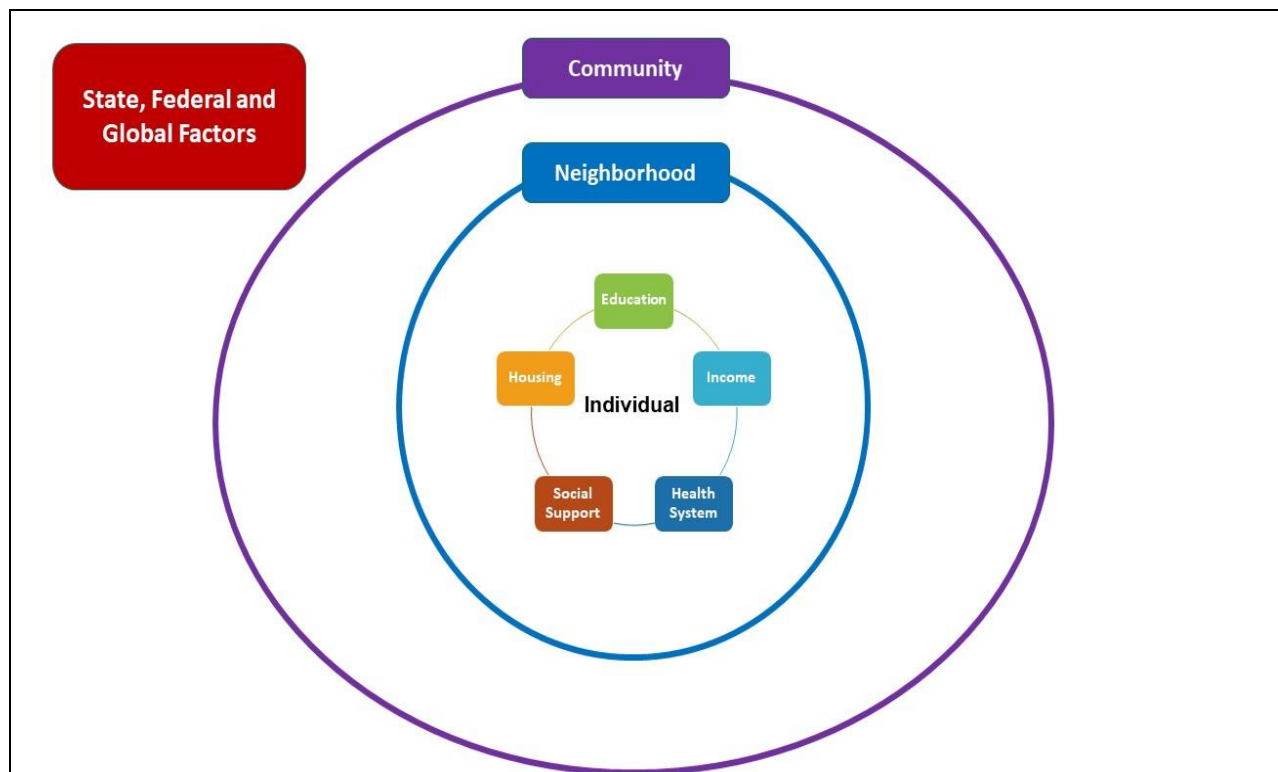
HEALTH SYSTEM



SOCIAL  
SUPPORT



HOUSING



# EXPOSOME

The measure of all the exposures of an individual in a lifetime and how those exposures relate to health\*

\*The National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC). <https://www.cdc.gov/niosh/topics/exposome/default.html#:~:text=The%20exposome%20can%20be%20defined,from%20environmental%20and%20occupational%20sources>. Accessed 4/20/2021

Science. 2020. 367(6476): 392-396.

# Wealth of Research Linking Individual-Level and Exposome SDOH to Brain Health



EDUCATION\*



INCOME\*\*



HEALTH SYSTEM\*\*\*



SOCIAL SUPPORT\*\*\*\*



HOUSING\*\*\*\*\*

## Example Articles for Individual-Level SDOH Associations (Thousands Available):

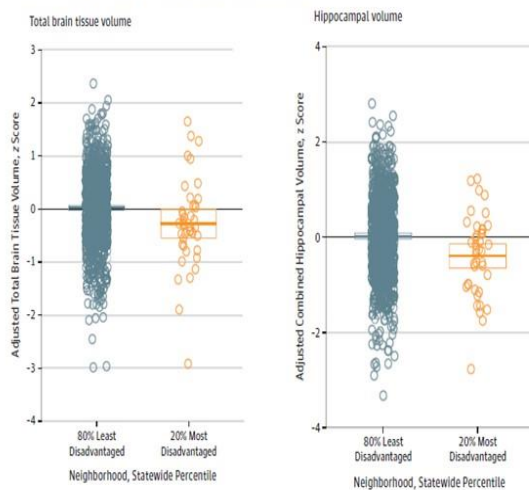
- \*Zahodne, et al. "The role of education...", *Neurobiology of Aging*, 2019
- \*\* Grasset, et al. "Relation between 20-year income...", *Neurology*, 2019
- \*\*\*Tsoy et al. "Assessment of disparities in....", *JAMA Neurology*, 2021
- \*\*\*\*Salinas, et al. "Association of social support...", *JAMA Open*, 2021
- \*\*\*\*\*Pineda, et al. "Housing quality and ...", *Scientific Reports*, 2021

## Example Articles for Exposome SDOH Associations (more available):

JAMA Neurology | Original Investigation

### Association of Neighborhood-Level Disadvantage With Cerebral and Hippocampal Volume

Jack F. V. Hunt, BA; William Buckingham, PhD; Alice J. Kim, BA; Jennifer Oh, BS; Nicholas M. Vogt, BA; Erin M. Jonaitis, MS, PhD; Tenah K. Hunt, MPH, PhD; Megan Zuelsdorff, PhD; Ryan Powell, PhD; Derek Norton, MS; Robert A. Rissman, PhD; Sanjay Asthana, MD; Ozioma C. Okonkwo, PhD; Sterling C. Johnson, PhD; Amy J. H. Kind, MD, PhD; Barbara B. Bendlin, PhD



JAMA Network | Open

Original Investigation | Public Health

### Association of Neighborhood-Level Disadvantage With Alzheimer Disease Neuropathology

W. Ryan Powell, PhD; William R. Buckingham, PhD; Jamie L. Larson, PhD; Leigha Vilen, BS; Menggang Yu, PhD; M. Shahrir Salmat, MD, PhD; Barbara B. Bendlin, PhD; Robert A. Rissman, PhD; Amy J. H. Kind, MD, PhD

#### Abstract

**IMPORTANCE** Social determinants of health, such as income, education, housing quality, and employment, are associated with disparities in Alzheimer disease and health generally, yet these determinants are rarely incorporated within neuropathology research.

**OBJECTIVE** To establish the feasibility of linking neuropathology data to social determinants of health exposures using neighborhood disadvantage metrics (the validated Area Deprivation Index)

#### Key Points

**Question** Can neighborhood disadvantage, a social determinant of health, be incorporated into existing brain bank data to evaluate the risk of biological outcomes, such as Alzheimer disease neuropathology?

Living in the most disadvantaged neighborhood decile increased odds of AD neuropathology



## Considering Interventions that Impact Social Determinants of Health



**All Require Consistent Flow of Resources to Sustain.**

**Challenge: What are the Potential Pathways to Sustainability for SDOH Interventions?**

**Government**  
(Federal, State, Local)

**Non-Profit**

**Industry**

## Why Might an Entity Target Resources to Sustain SDOH Interventions?



## Changing Market Forces: Creating Economic Incentives



Stimulate Targeted Investments in SDOH Interventions



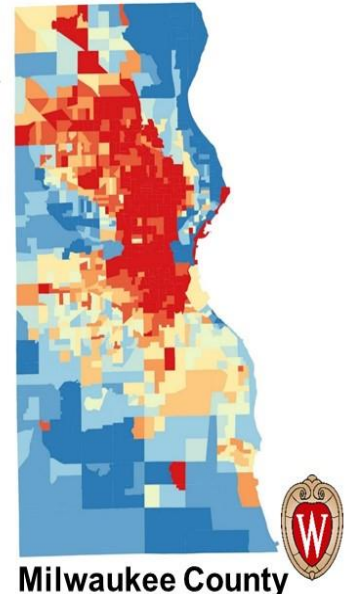
Efficient Match of Resource to Need



Community-Aligned

## Quantifying Social Exposome Using the Area Deprivation Index (ADI)\*

- ADI construction
  - 17 measures of social determinants of health across small, population sensitive areas
  - Ranked score, time concordant
- Current ADI measures for full US available through Neighborhood Atlas®\* data democratization tool
- Strongly linked to brain health metrics, including AD neuropathology
- Industry, clinical, government, community use



\*Kind and Buckingham, *New England Journal of Medicine*, 2018

## Potential Benefits of Leveraging Exposome Approach to Inform SDOH Policy

### INDIVIDUAL-Level SDOH Approach: Example, Current State of Most SDOH Programs

- Targeting Difficult: Measures of Need Rarely Available for All Persons
- Places Burden on Individual to File Forms
- Service Access Can be Challenging and Poorly Coordinated

### EXPOSOME SDOH Approach: Example, Incentivize Resource Targeting to High ADI Neighborhoods

- Targeting Simplified: Measures Available for All US
- Places Burden on System/Entity to Target Need (example, using ADI-payment adjustment to create market incentive)
- Incentivizes Coordination to Improve Access

# 2023 Accountable Care Organization – Realizing Equity, Access and Community Health (ACO-REACH)

- **Goal: Advance Health Equity to Bring the Benefits of Accountable Care to Underserved Communities.**

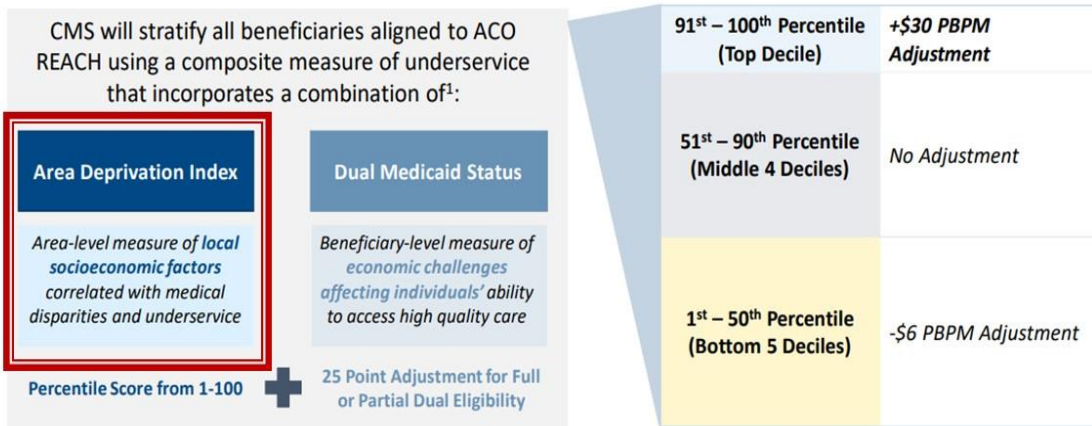
- ACO REACH will test an innovative payment approach to better support care delivery and coordination for patients in underserved communities and will require that all model participants develop and implement a robust health equity plan to identify underserved communities and implement initiatives to measurably reduce health disparities within their beneficiary populations.



\*Text taken from CMS.gov official ACO-REACH materials at <https://innovation.cms.gov/innovation-models/aco-reach>

## Health Equity Benchmark Adjustment

ACO REACH includes a benchmark adjustment that increases benchmarks for ACOs serving higher proportions of underserved beneficiaries



1. CMS may explore other variables to include in this assessment and will notify applicants prior to the start of PY2023 if any other variables are included.

\*2023 ACO Realizing Equity, Access, and Community Health (REACH) Model  
[\[https://innovation.cms.gov/media/document/aco-reach-fin-meth-webinar-slides\]](https://innovation.cms.gov/media/document/aco-reach-fin-meth-webinar-slides)



## ADI Use is Widespread

- NIH Dissemination of the ADI
- Industry Partnerships
- Professional Medical Societies
- Private Insurers
- State Medicaid Programs
- US Center for Medicare and Medicaid Services ACO-REACH Program

Examples:



## Considerations

- Individual-Level and Exposome Level SDOH Factors Impact (Brain) Health Independently. All SDOH Levels Are Important.
- Many Effective SDOH Interventions Exist. Sustaining and Spreading Them is Hard. New Approaches are Needed.
- AD Exposome Research Can Stimulate SDOH Policy and Market Innovation.
- The ADI is a Measure of the Social Exposome, Linked to Brain Health, in Wide-Spread Use and Available to All\*.



\*<https://www.neighborhoodatlas.medicine.wisc.edu/>



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ADRC participants  
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