

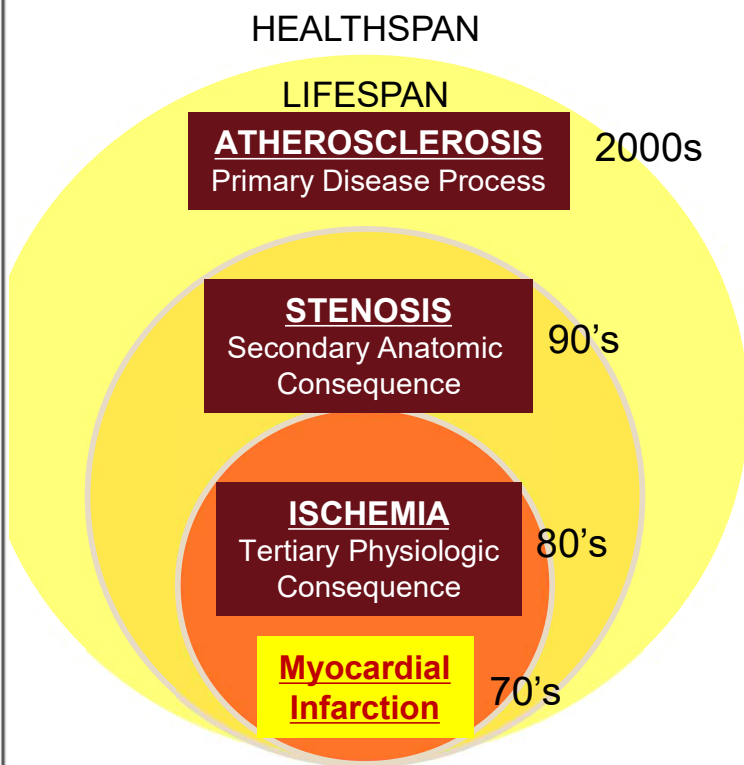
Precision-Systems Thinking to Reduce Inequities in Cardiometabolic Care

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Case Western Reserve School of Medicine
Cleveland, OH*



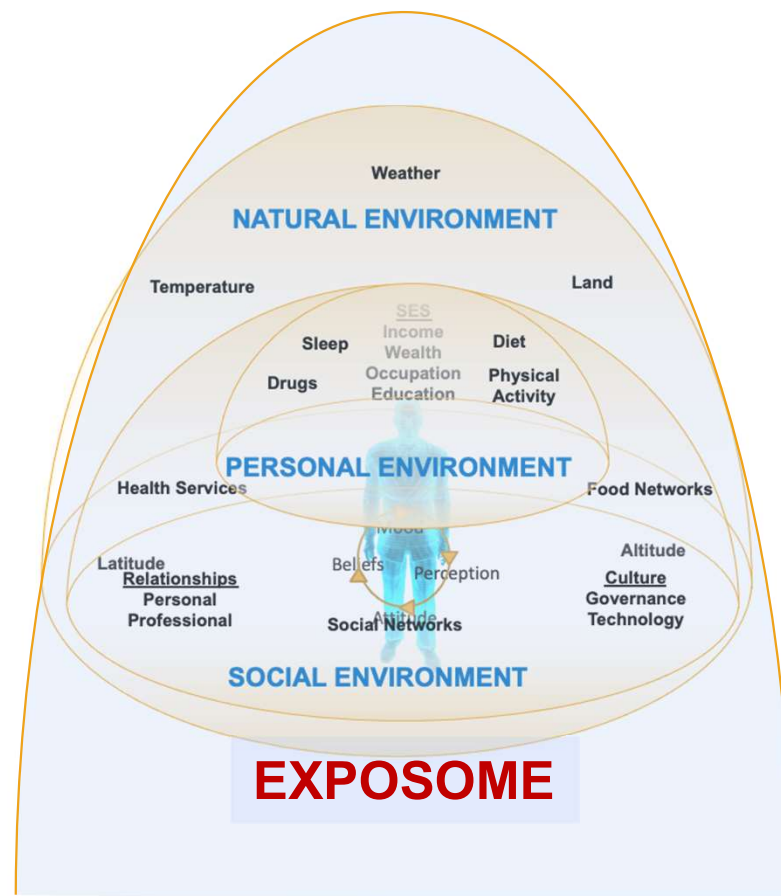
Disclosures Relevant to this Presentation: P50 Center NIMH

We ask the right questions, in the wrong order.



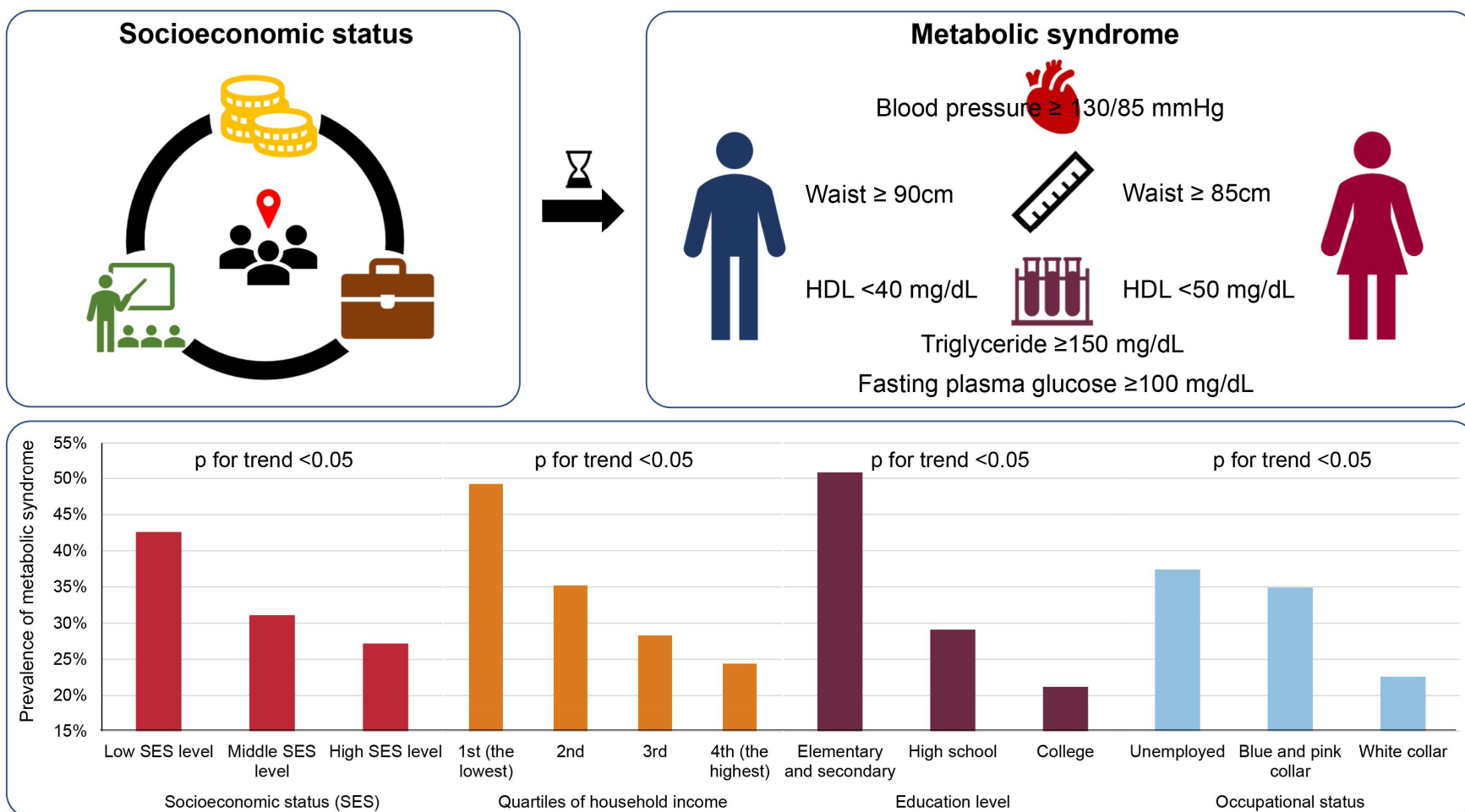
We reward the wrong behaviors

Health From a Wide-Angle Lens

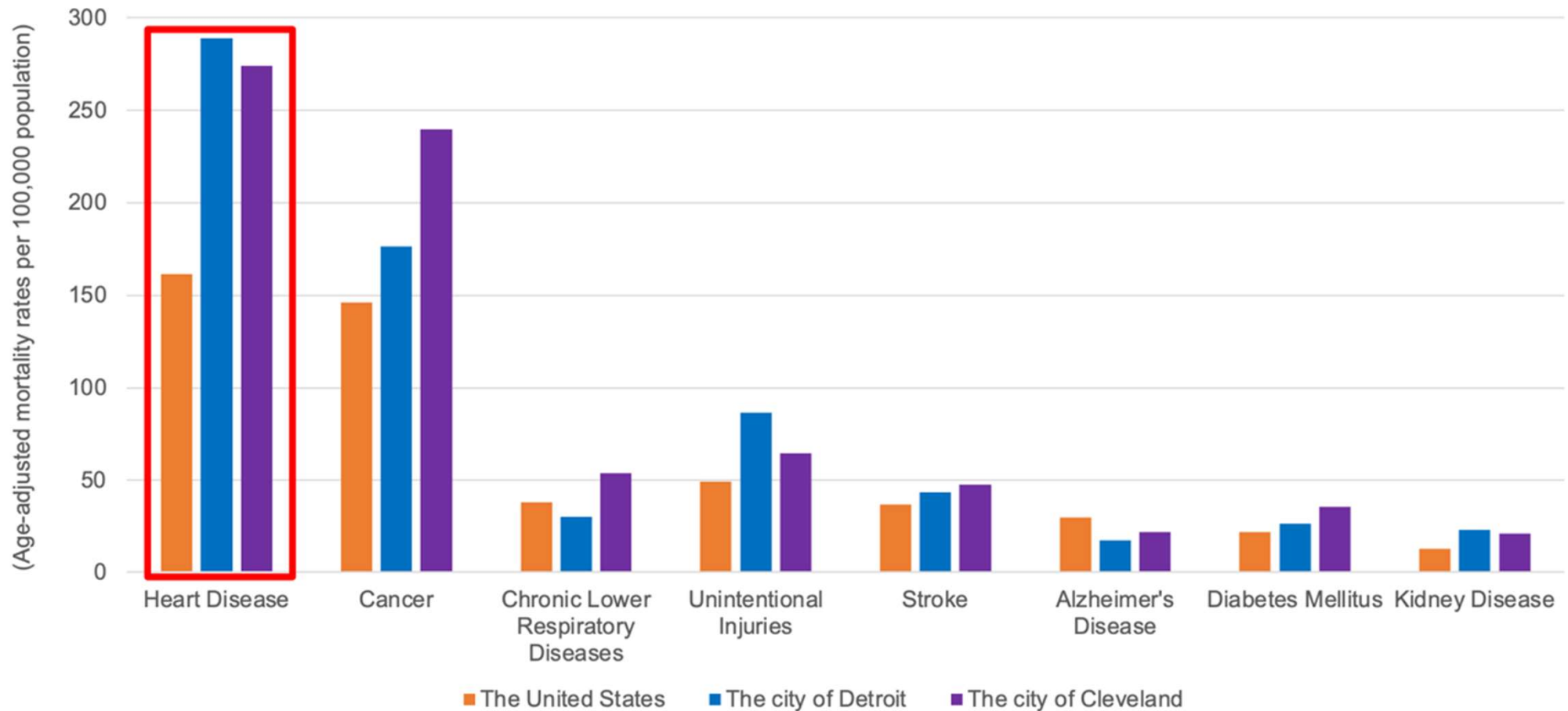


CVD as the Leading Cause of Disproportionate Health Outcomes in Black Individuals:

- Black Americans have >2.0 fold higher rates of fatal heart attacks than whites
- Stroke Rates in Blacks 4.5 fold higher than whites
- Black patients after a sudden cardiac arrest less likely to survive



Great Lake Cities as Hotspots of Chronic Non-Communicable Diseases

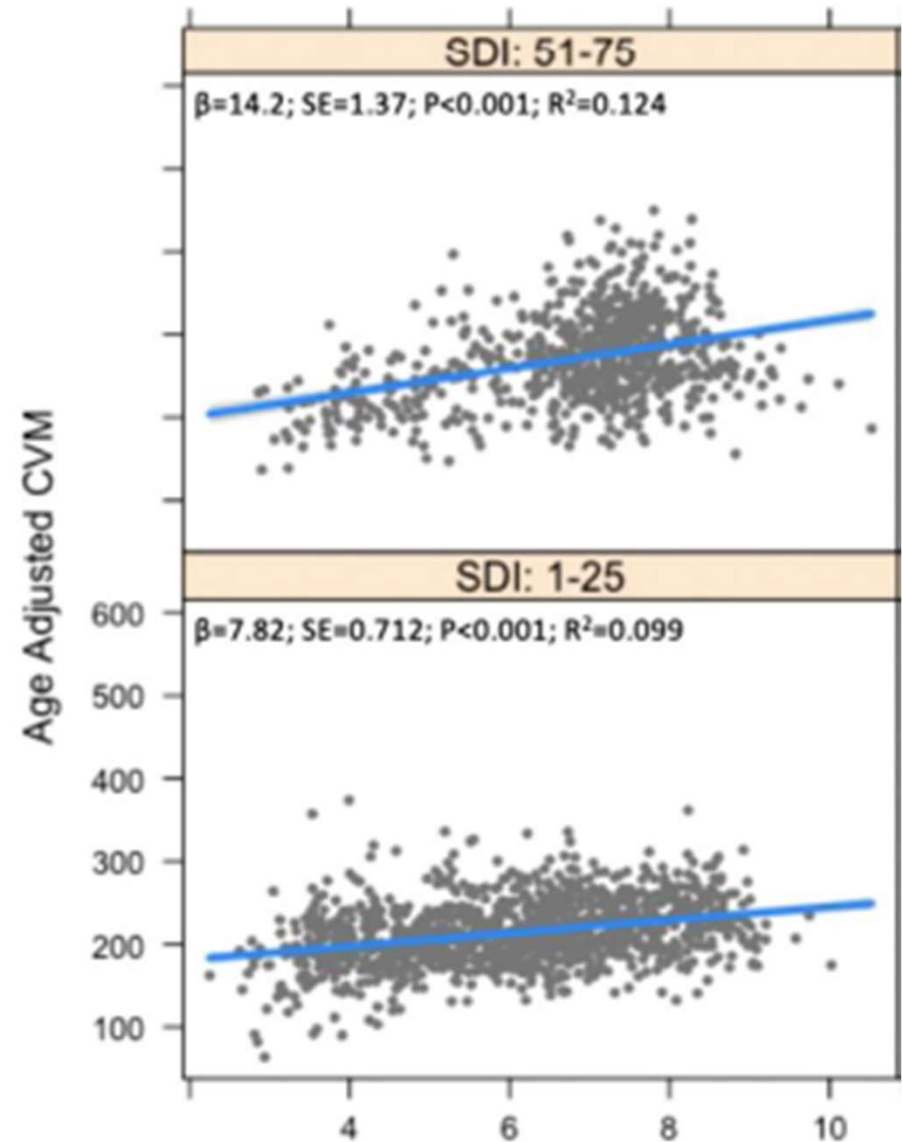
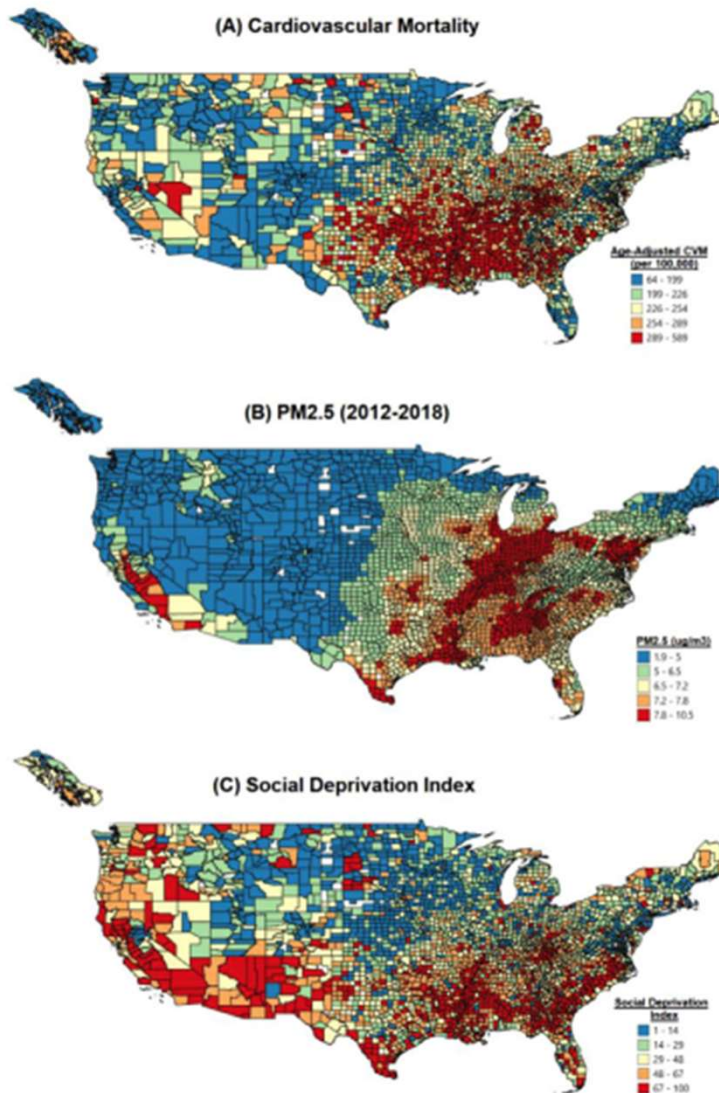


Sources: (1) 2019 Geocoded Michigan Death Certificate Registry. Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services. (2) CDPH Acces To Care Report 2019.



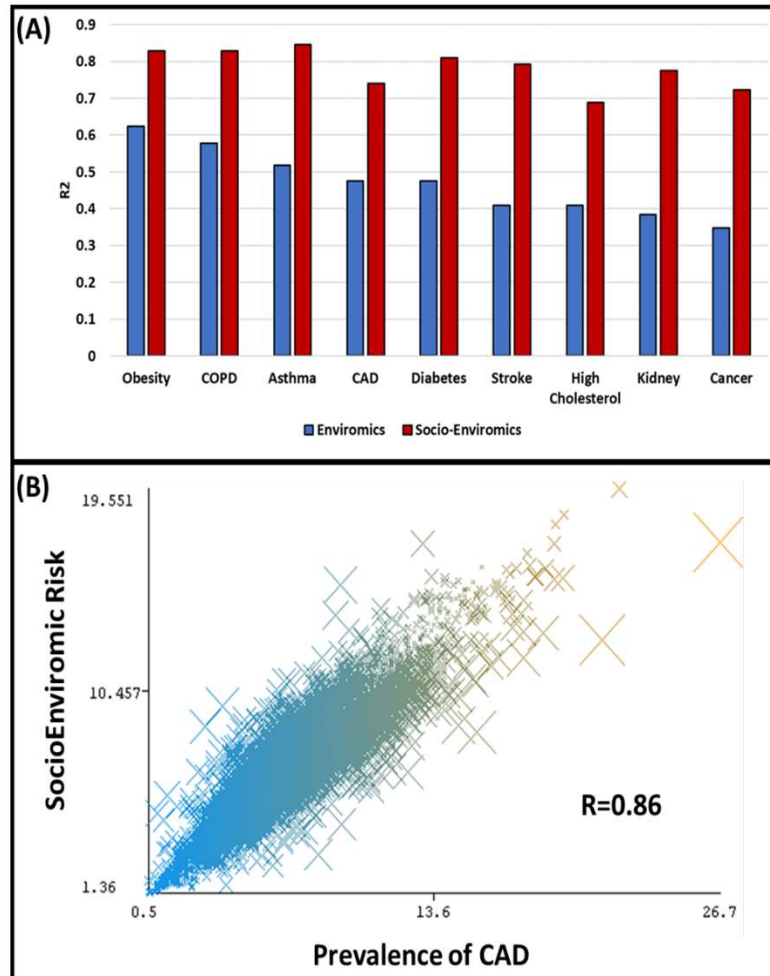
Socioenviromic Origins of CV Mortality in the United States

Cross-sectional analysis. N=5,769,315 CV deaths, 3106 US counties



Association between ambient air pollution and county-level cardiovascular mortality in the United States by social deprivation index. Bevan, G, Al-Kindi S et al. Am Heart J. 2021 May;235:125-131.

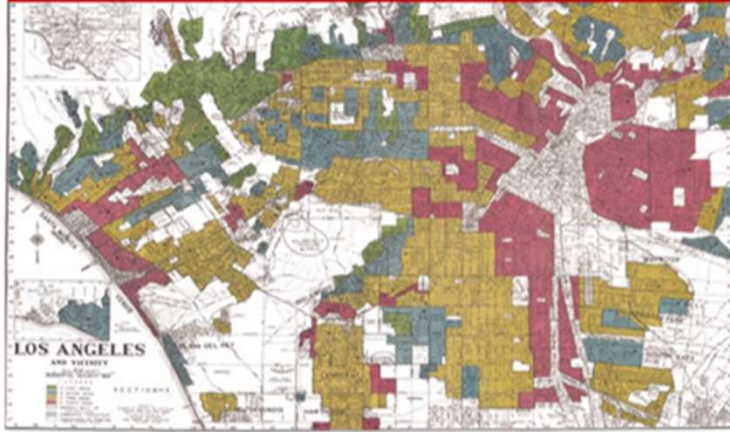
Socioenviromic Risk Scores Powerfully Predict Cardiometabolic Disease and Cancer



27 census-tract socioeconomic (income, education, housing, transportation, unemployment, disability, minority and environmental variables (PM_{2.5}, ozone, SO₄, black carbon, CO, organic matter, light and noise pollution) in >70,000 census tracts in the US.

>30 machine learning algorithms used with the best performing ensemble model (bagging with reduced error pruning tree).

1930s "Redlining" Maps



Decades of "disinvestments" and segregation

Environmental Exposures

Socioeconomic Stressors

Racial Segregation/Discrimination

Lack of Access to Care

Unhealthy Lifestyles

11,178 Census Tracts today with Redlining Data



Increasing HOLC
Neighborhood Risk

Best

Still Desirable

Declining

Hazardous

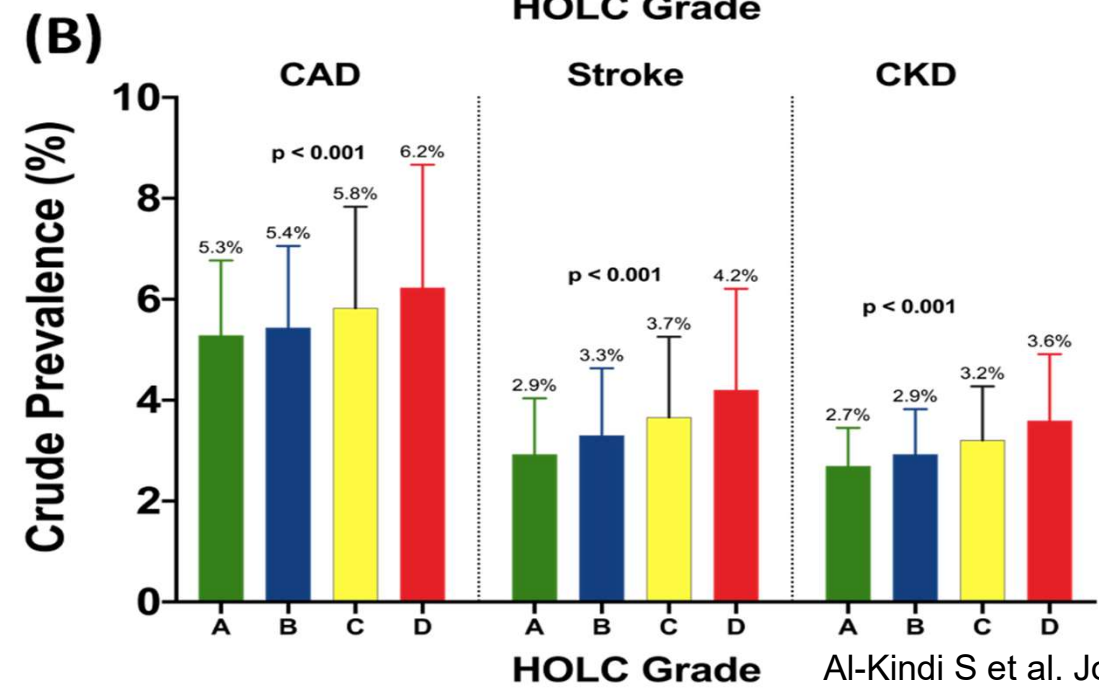
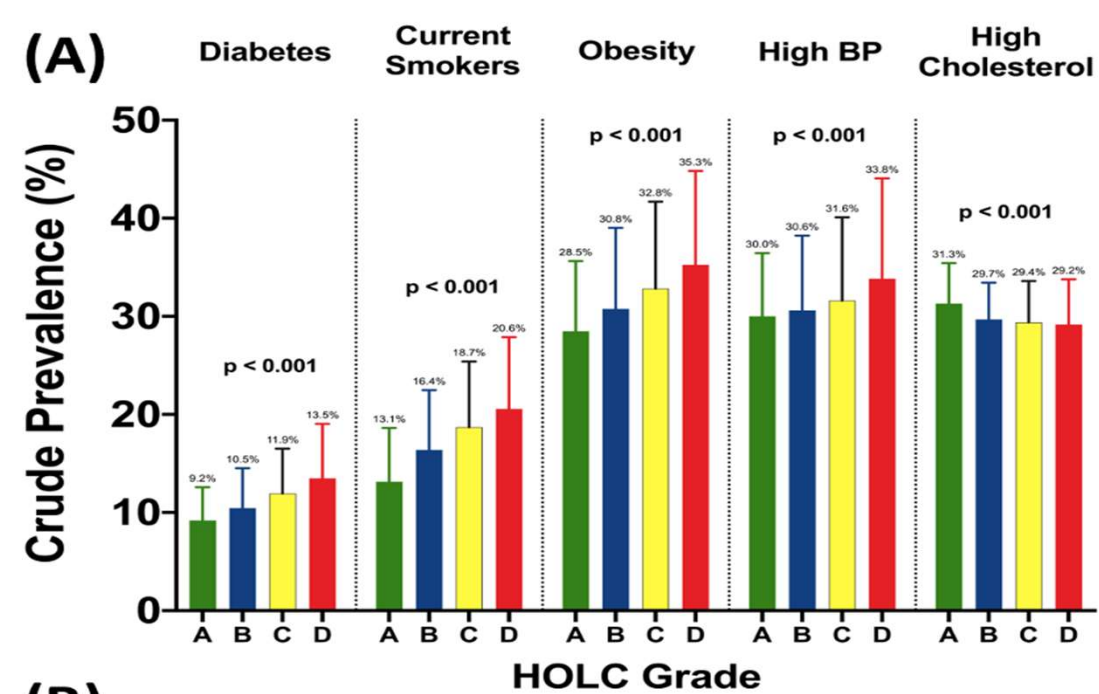


Cardiometabolic
Risk factors



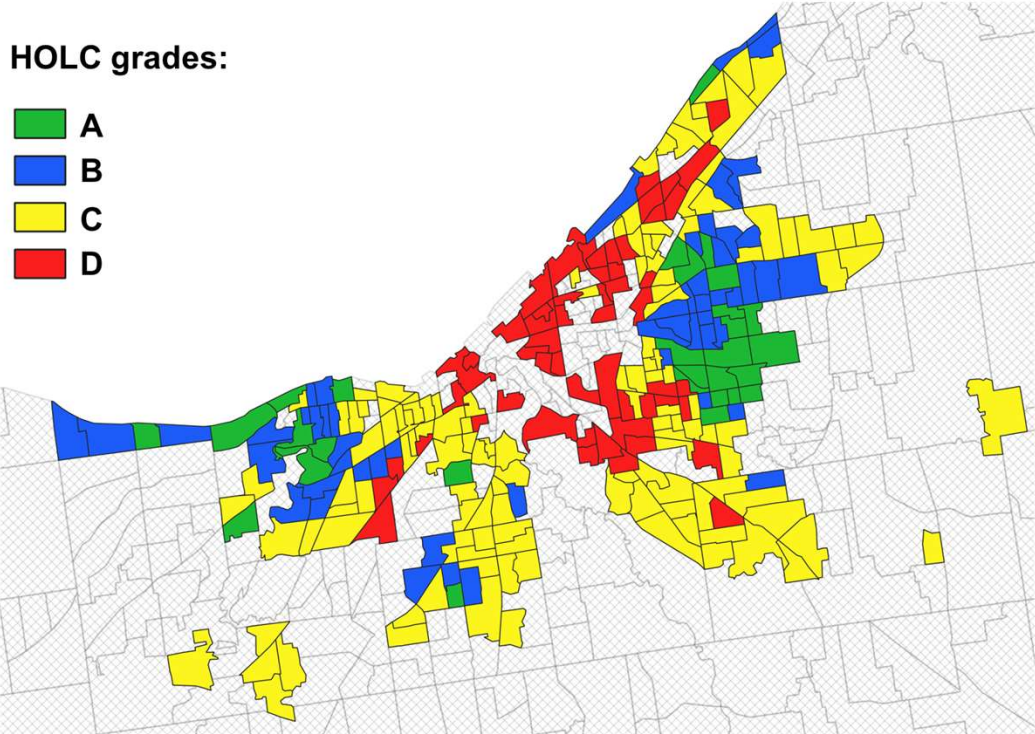
Adverse Cardiometabolic
Outcomes

Mean prevalence of risk factor indicators and cardiometabolic health outcomes in 2019 across HOLC grades



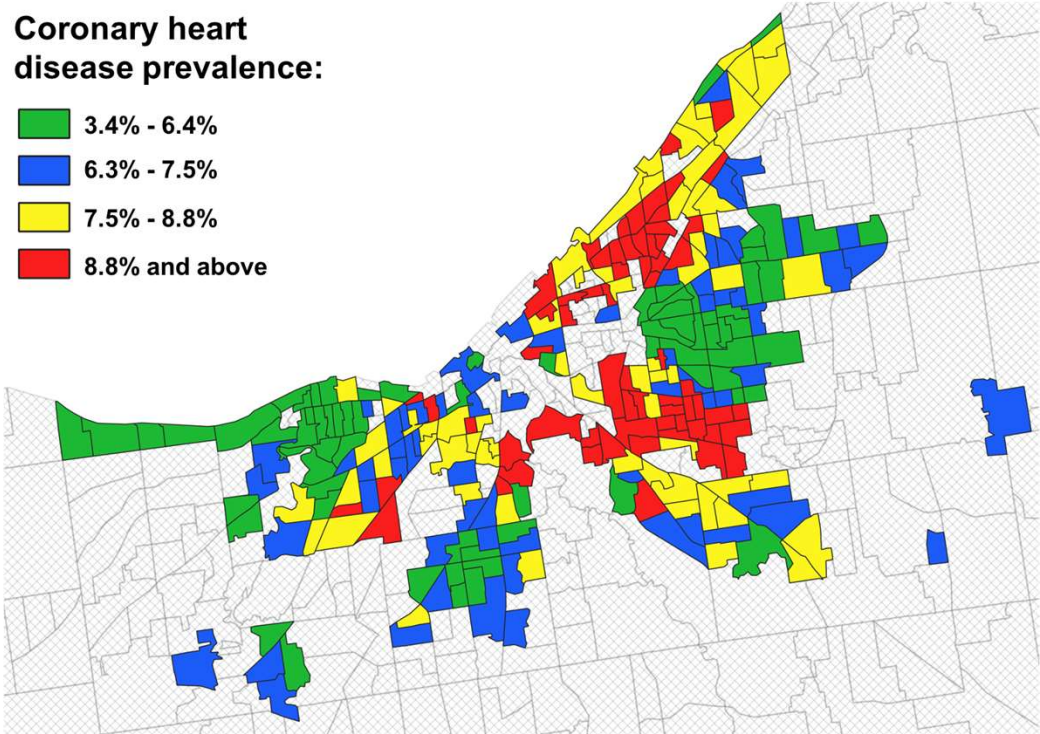
HOLC grades:

- A
- B
- C
- D



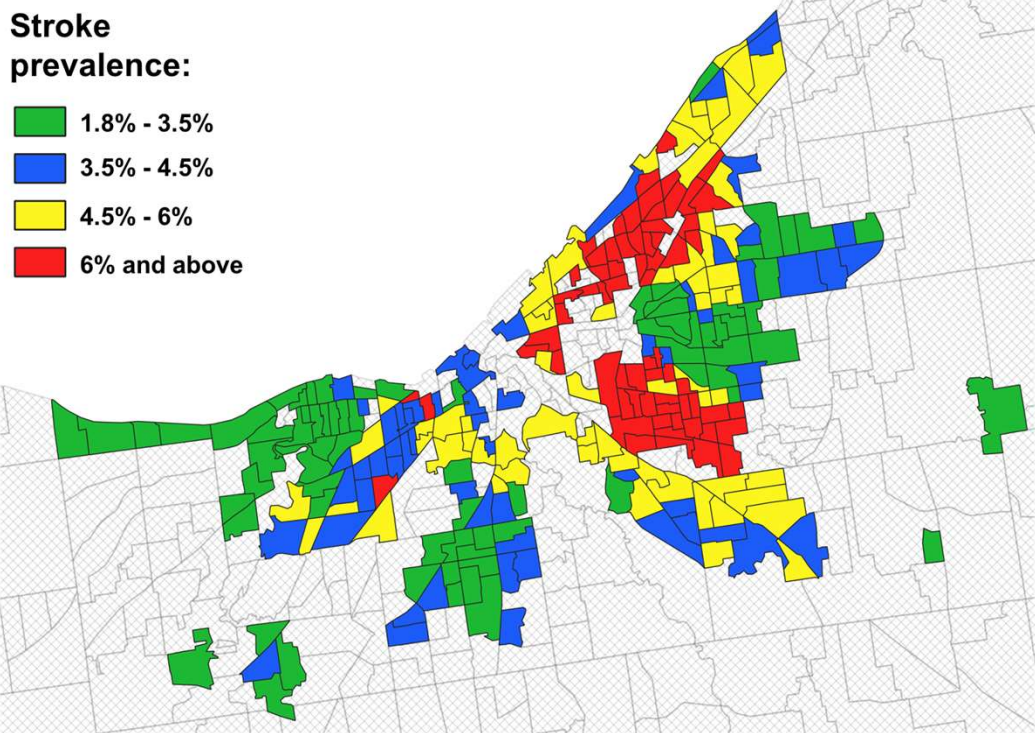
Coronary heart disease prevalence:

- 3.4% - 6.4%
- 6.3% - 7.5%
- 7.5% - 8.8%
- 8.8% and above



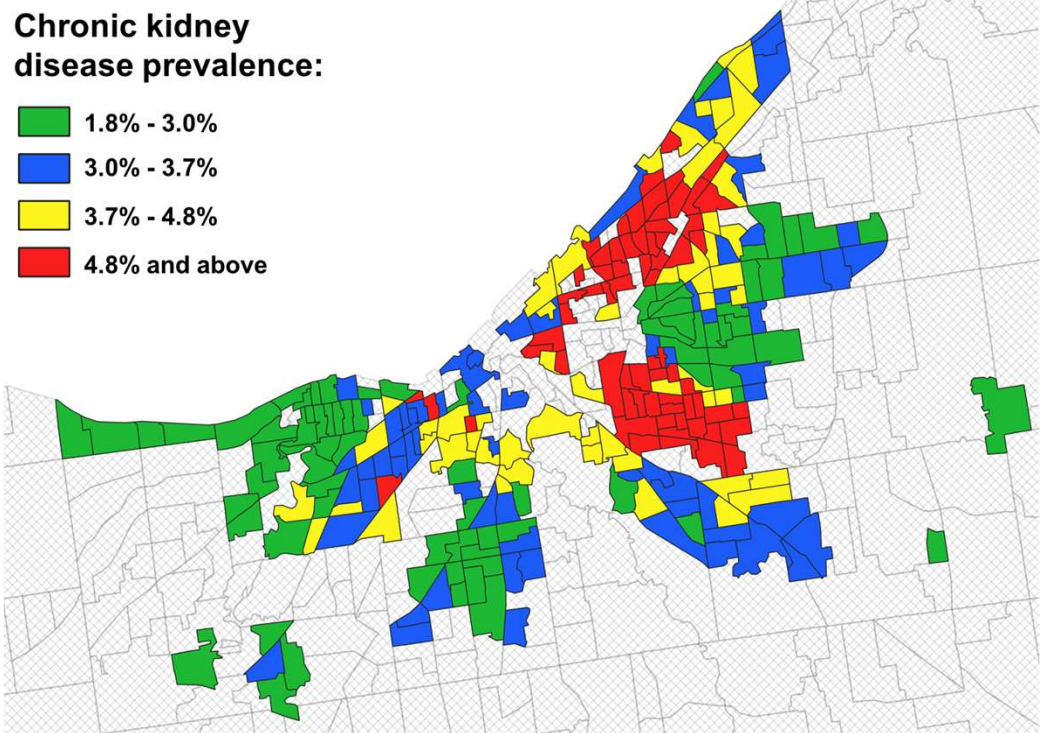
Stroke prevalence:

- 1.8% - 3.5%
- 3.5% - 4.5%
- 4.5% - 6%
- 6% and above

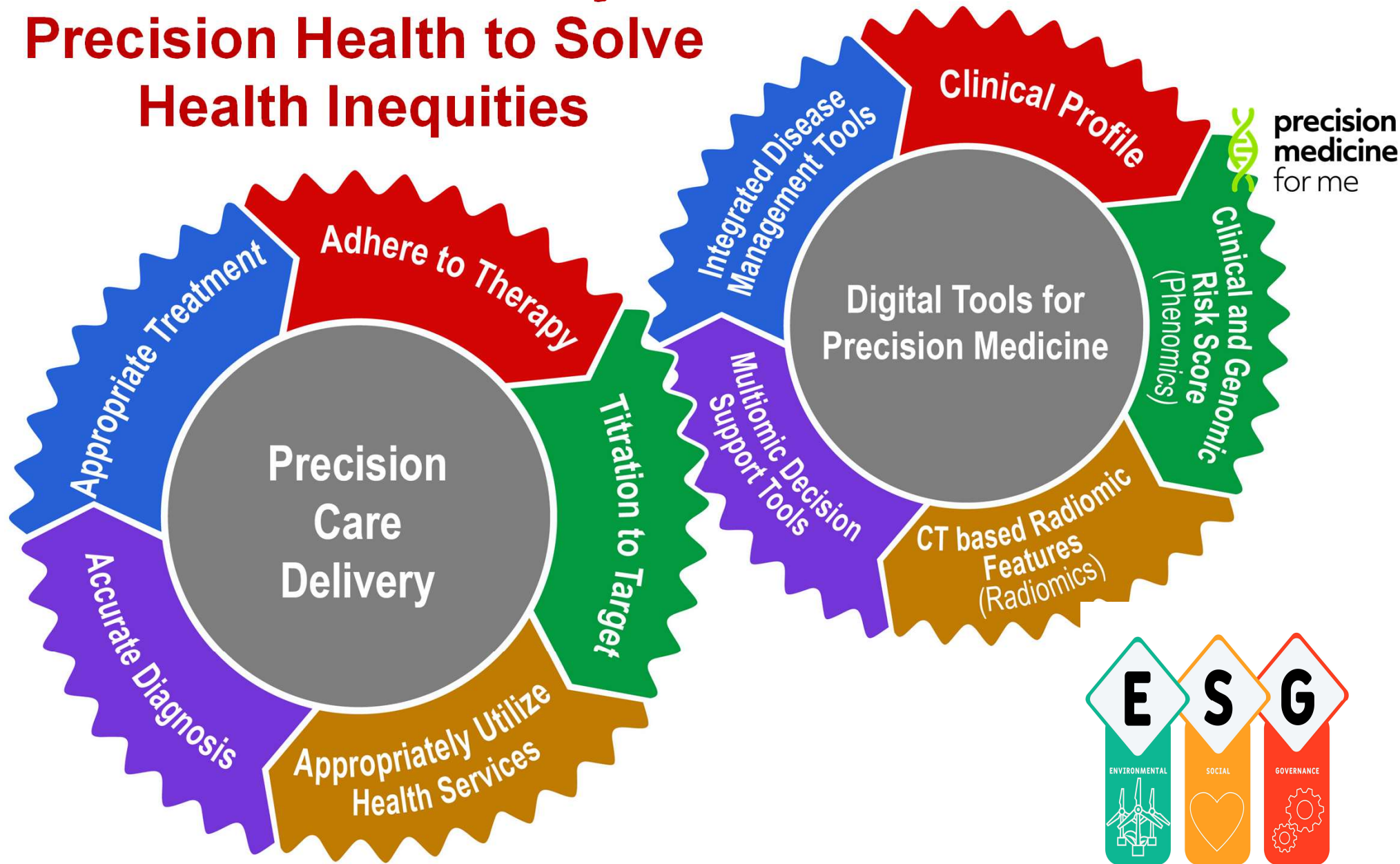


Chronic kidney disease prevalence:

- 1.8% - 3.0%
- 3.0% - 3.7%
- 3.7% - 4.8%
- 4.8% and above



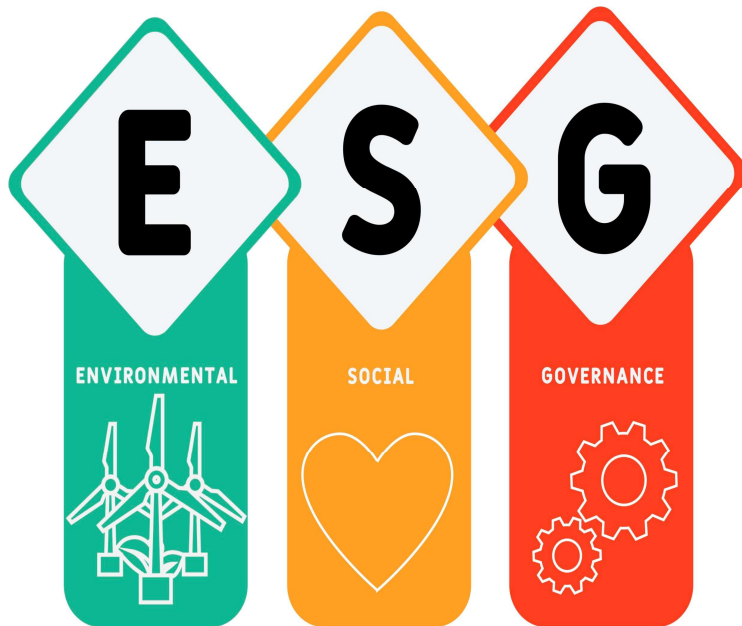
Precision Care Delivery and Precision Health to Solve Health Inequities



INNOVATION WITH PURPOSE

For the Trusted Digital Future

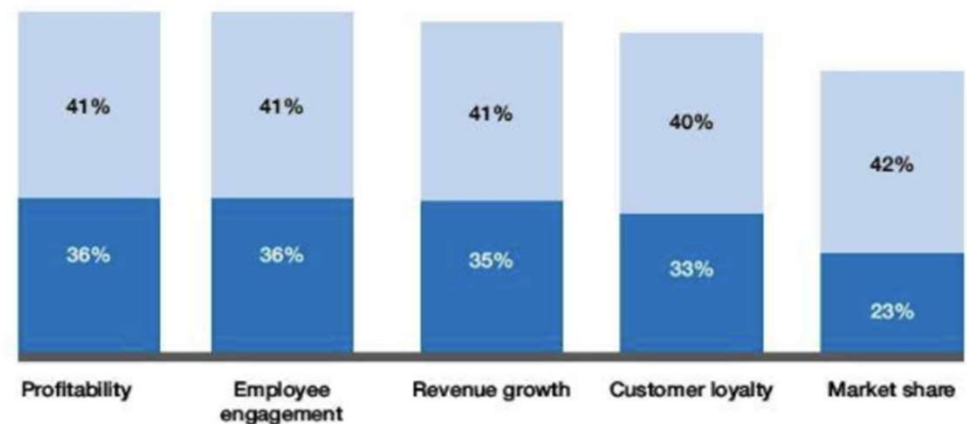
THE
WALL STREET
JOURNAL.



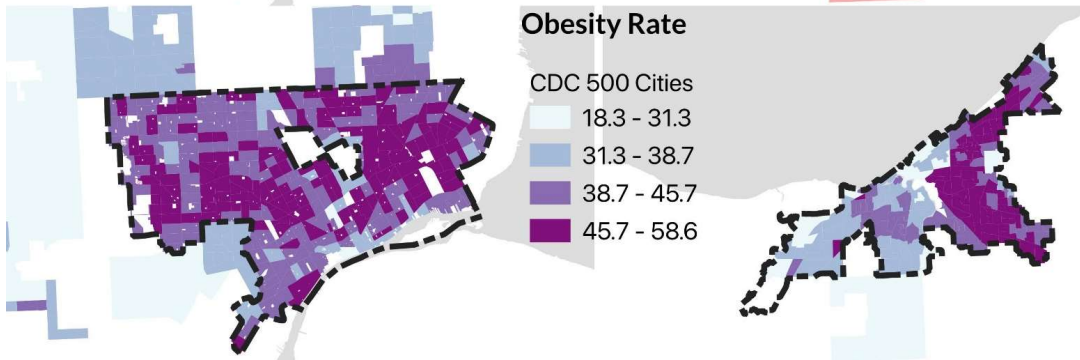
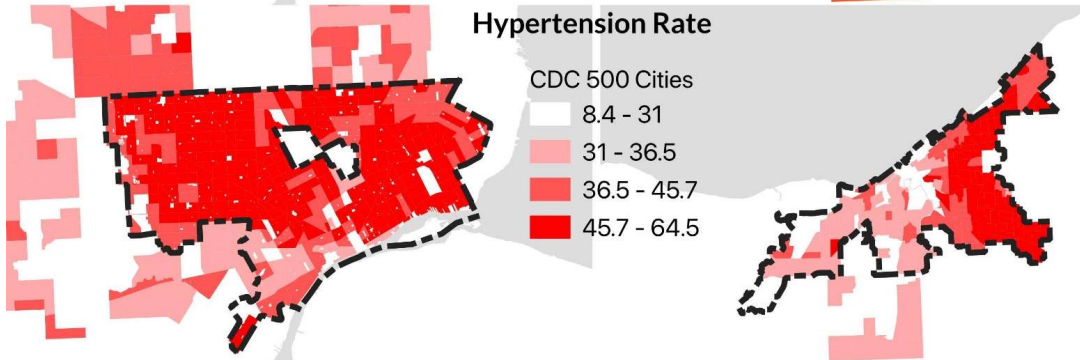
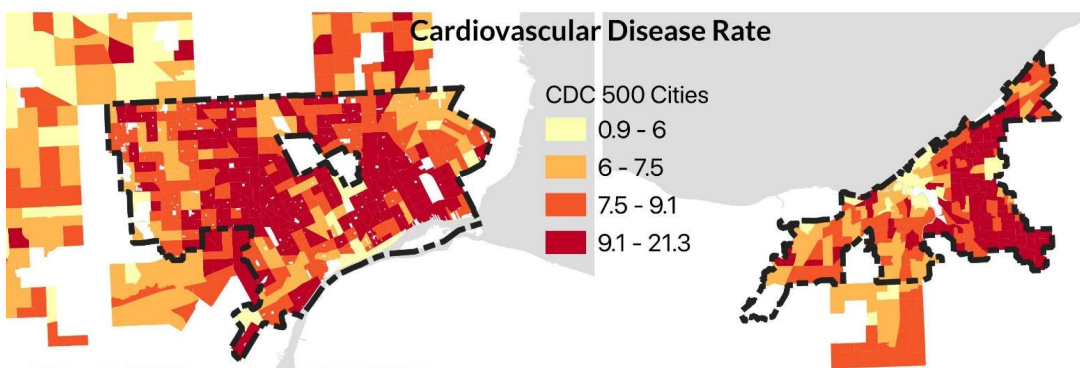
Strong Agreement That Social Purpose [Economic, Cultural, Social, Environmental] Issues Are Driving Performance Outcomes

Impact of 'Social Purpose' on Business Outcomes

Large impact Very large impact



Source: WSJ Intelligence & NTT Global Innovation with Purpose Study, July 2021



ACHIEVE GREATER

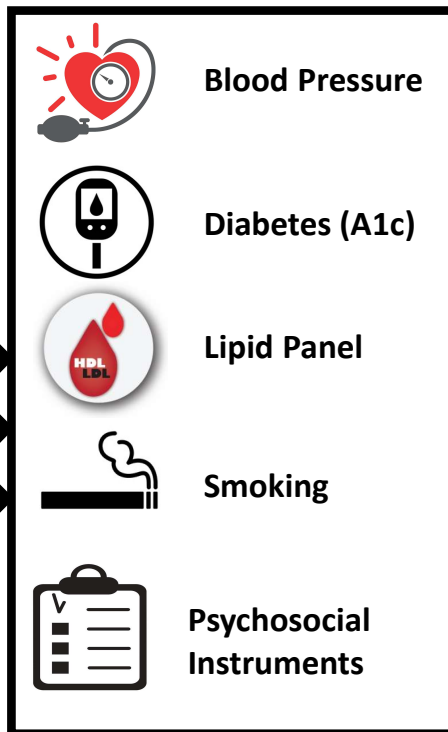
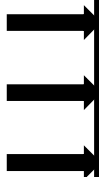
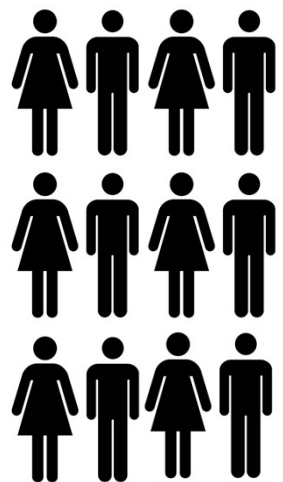
Addressing **Cardiometabolic Health Inequities**
by **Early PreVENTion** in the **GREAT Lakes Region**

P50 Center

Wayne State University
UH/Case Western Reserve
University

Total Award: \$18.2 Million
UH/CWRU: \$ 4.6 Million

**500 AA Men and Women
Living in High
SocioEnviromic Risk
Communities**



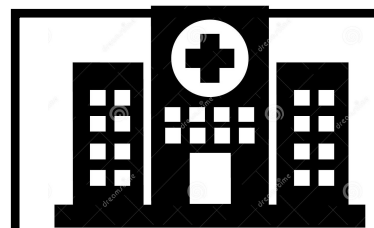
CHW



CAC



CHW



CAC > 100 + \geq CV RF (n=250)



**ACHIEVE-CINEMA
INTERVENTION**

CHW



CAC < 100 + \geq CV RF (n=250)

**PRIMARY CARE
EVALUATION**

Primary Endpoint

LDL < 100 mg/dL
BP < 130/80 mmHg
A1c < 7%

Connect with Healthcare

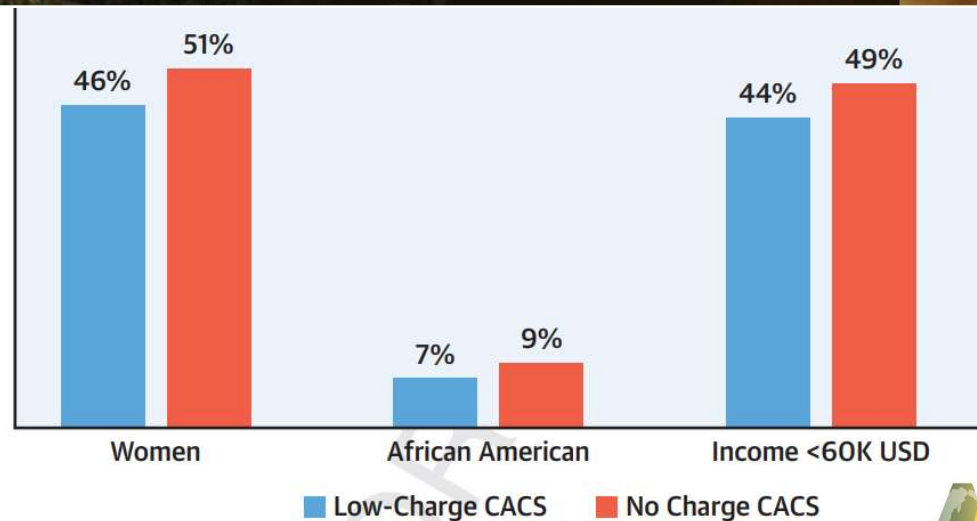
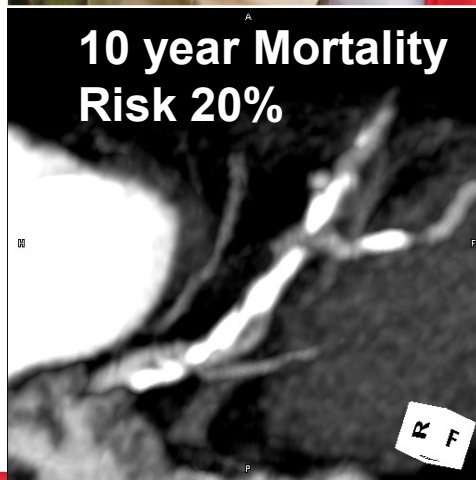
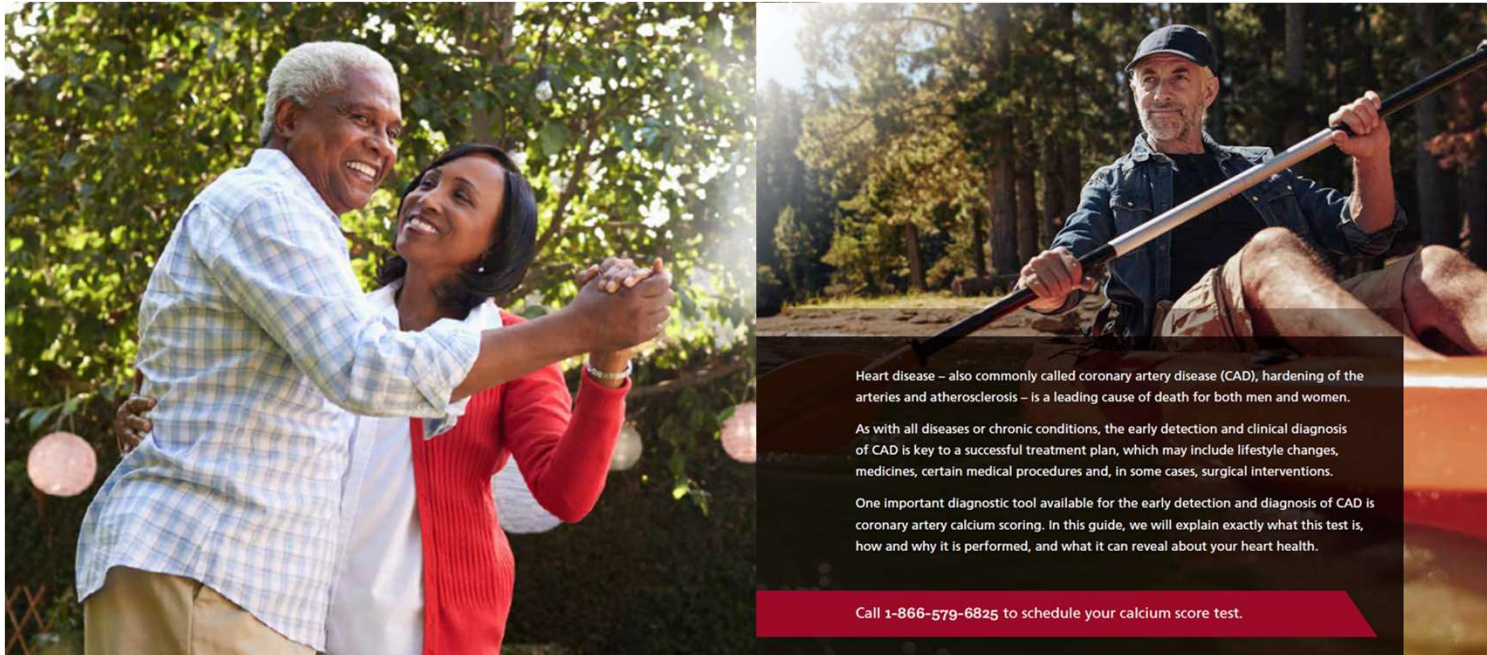
**PAL² PRAGMATIC PERSONALIZED ADAPTIBLE LIFE
STYLE AND LIFE CIRCUMSTANCE INTERVENTION**

ACHIEVE UNIQUE VALUE ADD TO SUBJECTS WITH SDOH NEED: PAL² INTERVENTION

Pragmatic	Link patients to existing and widely available social services in their communities
Personalized	Tailored linkage to care (medical, SDoH), educational interventions and med adherence interventions per individual need/goals
Adaptable approaches	Care delivered by phone, web-link, in community settings or in the home
Lifestyle	Selection from a menu of lifestyle education per individual needs/goals
Life circumstances	Modify intervention content and dose of treatment provided based upon changes in needs/goals that arise over time

Calcium Scoring – Learn Your Heart Disease Risk at UH

World's Largest No-Charge Coronary Artery Calcium Scoring Program for Community Benefit! Over 60,000 patients.....



16

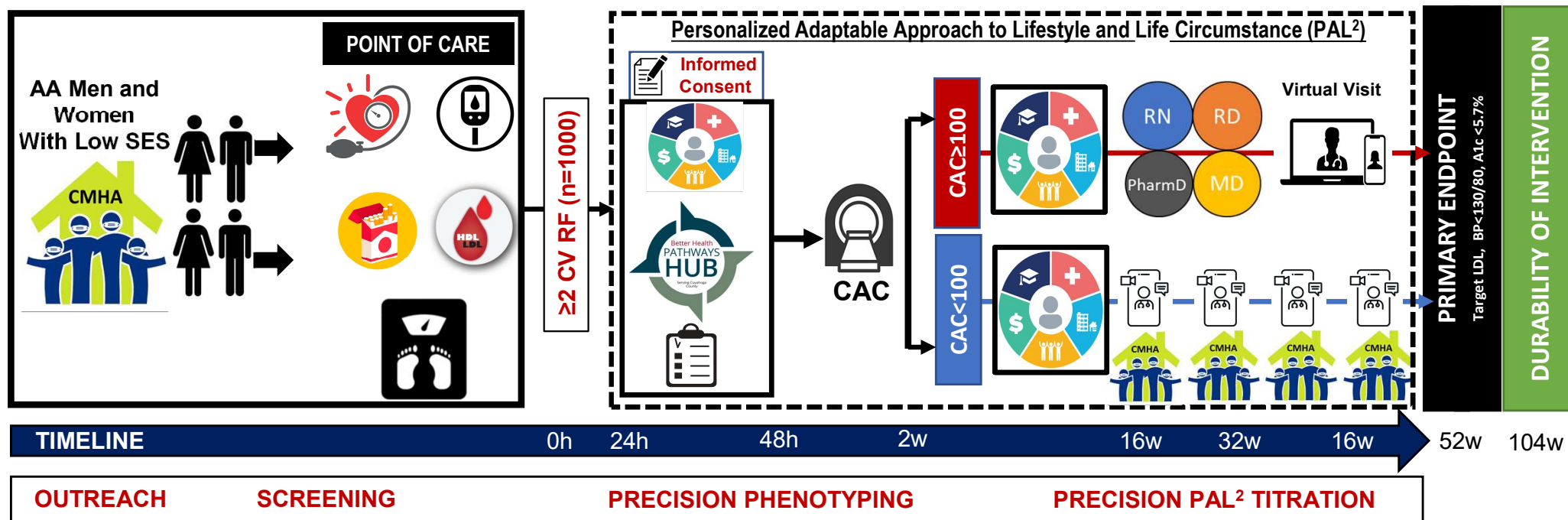


**Addressing Cardiometabolic Health Inequities by
Early PreVention in the **Great LakEs** Region**

P50 Center

Wayne State University
UH/Case Western Reserve
University

Total Award: \$18.2 Million



ACHIEVE Precision Biometrics

Hardware



Cellular/Bluetooth/NFC Smart Cap

3

Key Features

- Records each cap opening
- Rechargeable battery (1yr/charge)
- Bluetooth Reusable
- LED light pipe
- Internal memory storage
- Works with standard vials



Scale



BPM



Smart Watch



5G Hub

Key Features

- Connects to various third party medical devices
- Provides connectivity out of the box
- Built in cellular connectivity
- Upgrades automatically over the air
- Discrete size and profile



Confidential

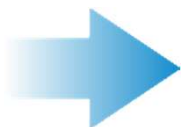
ACHIEVE Patient Journey Example



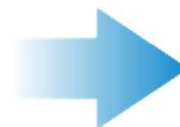
Confidential



Devices and DataHub given to patient.



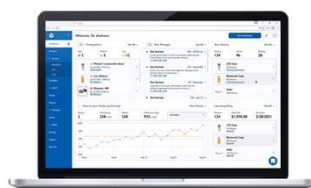
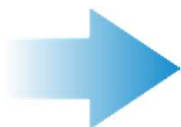
Patient plugs in the DataHub into the wall



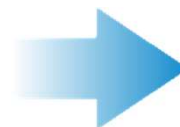
Once the DataHub is active the patient uses devices as they would normally.



Reminders, notification can be sent from RxCap to patient



CareGiver monitors activity on RxCap's platform.



Data can also be sent to client via API



All CMHA Residents
 Jeffrey Patterson
 Delores Gray
 Jeffrey Wade
 Carla Haren



Rita Horwitz
 Jonathan Lever



Patrick Runnels
 Tryg Dolber
 Esther Thatcher
 Tyler Coy
 Danielle Price



Sarah Rahmani
 Jan Friswold
 Elke Eaton



Heather Conger
 Fonda Maclain
 Quiana Howard
 Yasvi Iyer
 Tyler Coy

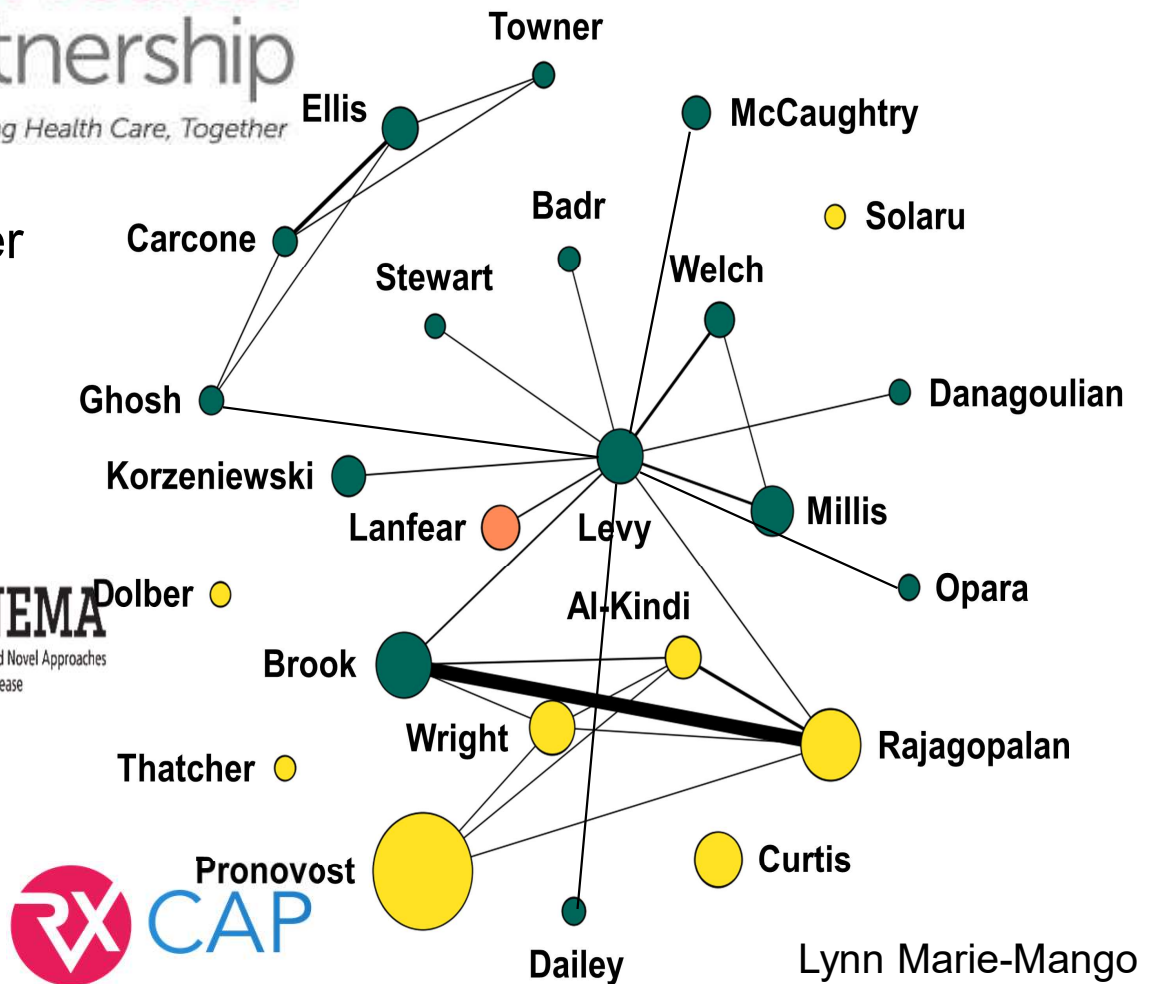


Esther Thatcher



THANK YOU!

Wayne State –CWRU Team



David MacVittie
 Ram Subramaniam
 Sreeram Ranakrishnan



Sadeer Al-Kindi
 Khendi White Solaru
 Jackson Wright