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Addressing Cancer Health Disparities in California:
Social Determinants & Multilevel Research

California Dialogue on Cancer | April 30, 2019

Social determinants and Multilevel research

- Relevance of social determinants of health
  - Multilevel disparities research
  - Role of neighborhoods
- Examples of multilevel disparities research
  - Measuring neighborhoods—ethnic enclaves
  - Intersectionality of social determinants of health
- Advancing multilevel disparities research
  - Data collection—Sexual gender minority status, small populations
  - Recommendations
- From multilevel research to cancer control

" SDOH are the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life. "

Word Health Organization

Relevance of social determinants of health

Social Determinants of Health (SDOH)

Kaiser Family Foundation

Beyond Health Care: The Role of Social Determinants in Promoting Health and Health Equity, Artiga and Hinton 2018

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Employment	Housing	Literacy	Hunger	Social integration	Health coverage
Income	Transportation	Language	Access to healthy options	Support systems	Provider availability
Expenses	Safety	Early childhood education		Community engagement	Provider linguistic and cultural competency
Debt	Parks	Vocational training		Discrimination	Quality of care
Medical bills	Playgrounds	Higher education			
Support	Walkability				

Health Outcomes

Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

http://www.kff.org/disparities-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/

Social Determinants of Health (SDOH)

Meta-analysis of ~50 studies found that social factors accounted for **1/3 of total deaths** in US

S. Galeo. AJPH 2010

"Combining clinical, basic, and social science research to examine the relationships between policy, the social and physical environment, and disparities in health outcomes."

Warnecke et al. AJPH

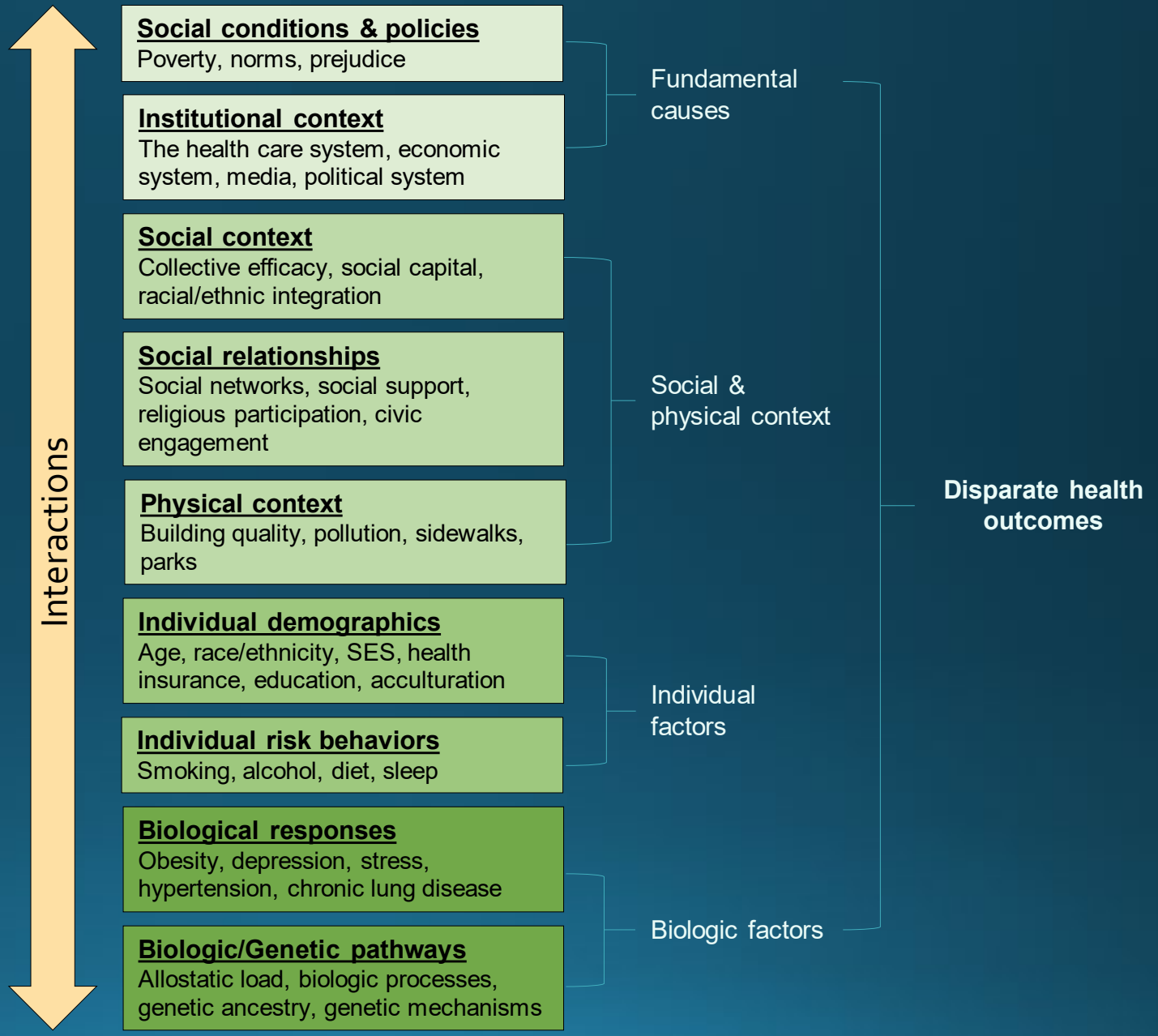
Centers for Population Health and Health Disparities, NIH

Multilevel disparities research

Cells-to-Society model

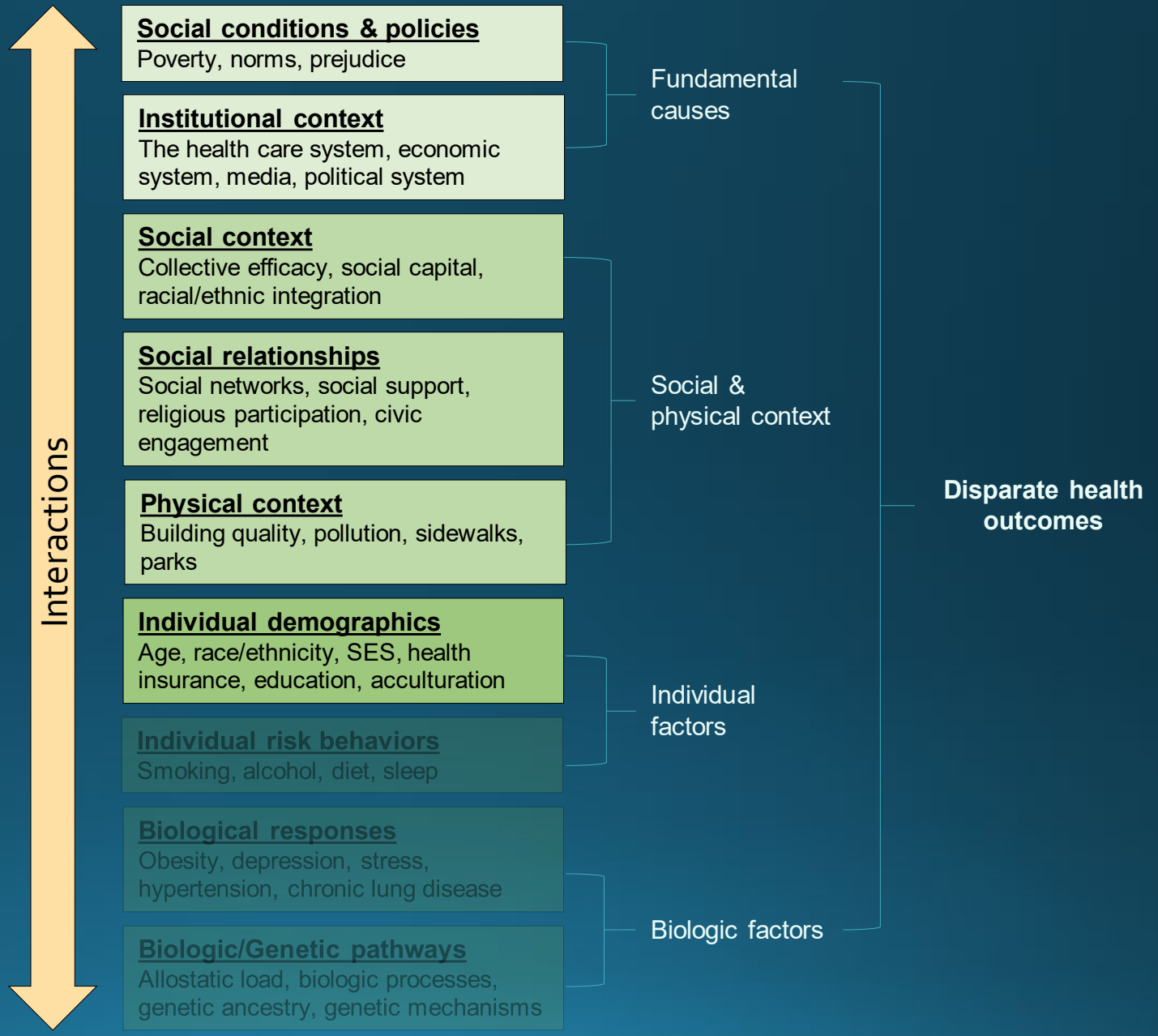
A framework for multilevel research

Centers for Population Health and Health Disparities, NIH



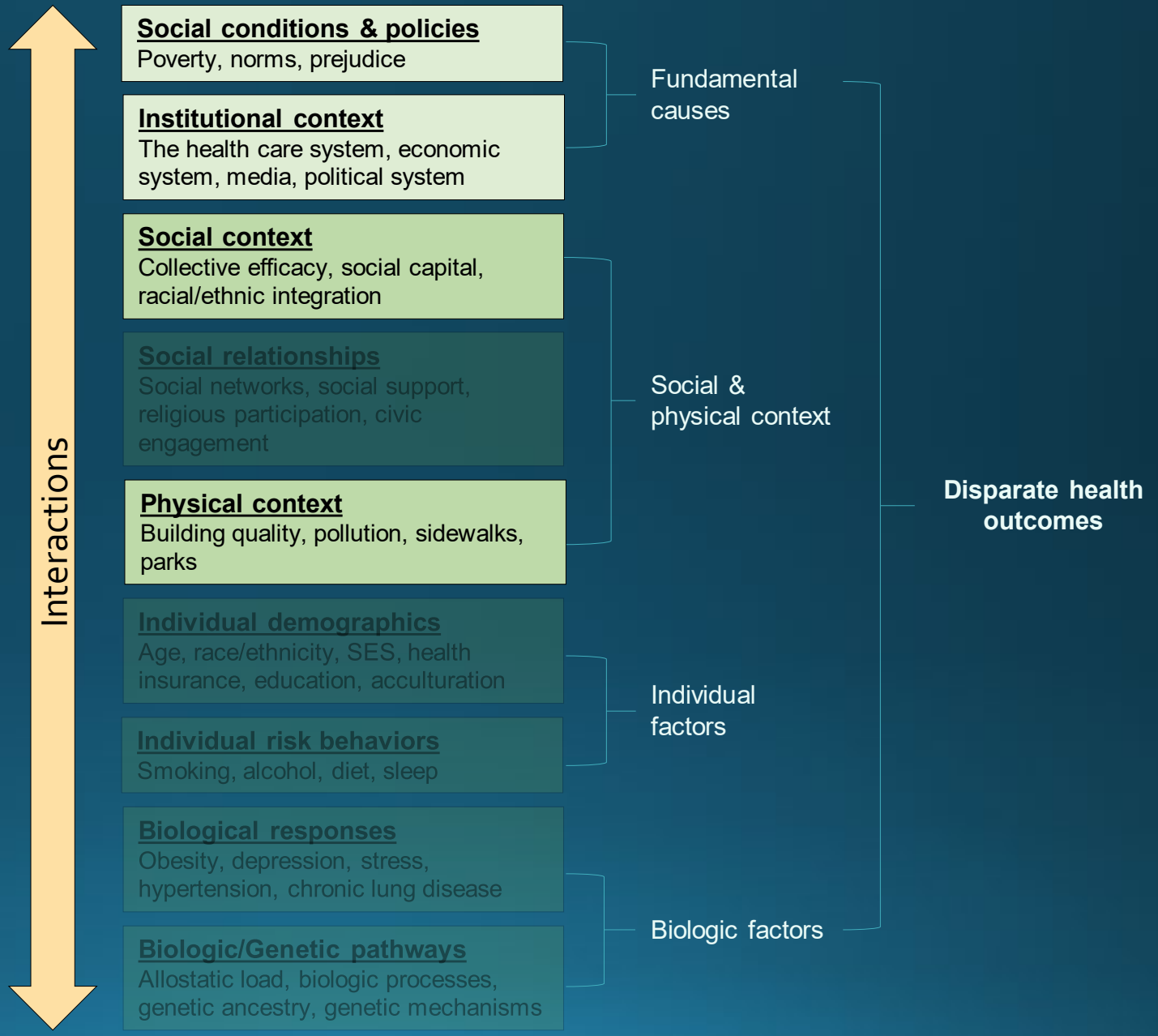
Warnecke et al. AJPH 2008

Social determinants



Warnecke et al. AJPH 2008

Neighborhood context



Warnecke et al. AJPH 2008

Neighborhood context in cancer control

When we think about health, we usually think about health care and access to health care and the quality of care. But what research clearly shows is that health is embedded in the larger conditions in which we live and work….

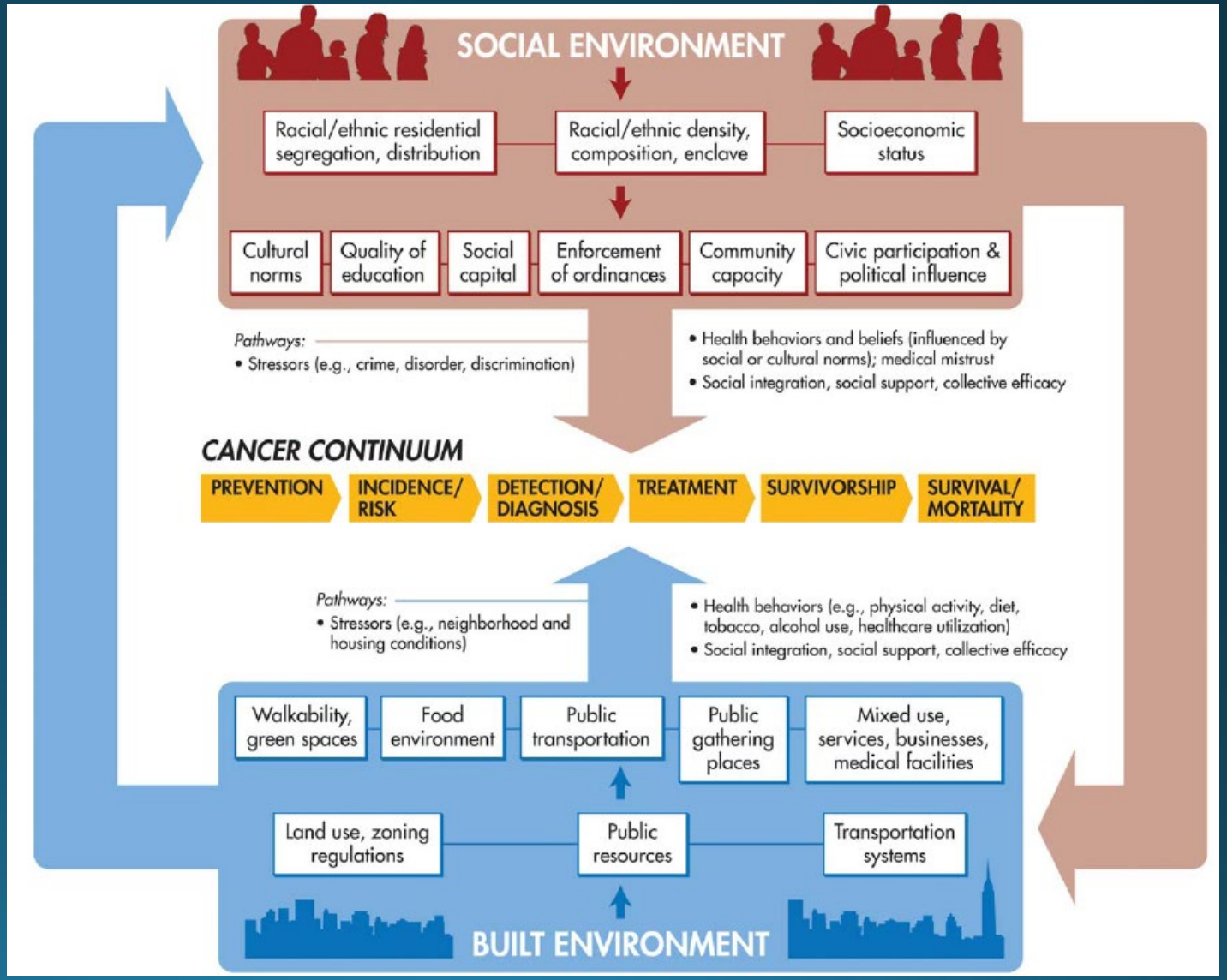
Sometimes, we naively think of improving health by simply changing behaviors. But the choices of individuals are often limited by the environments in which they live."

-David Williams

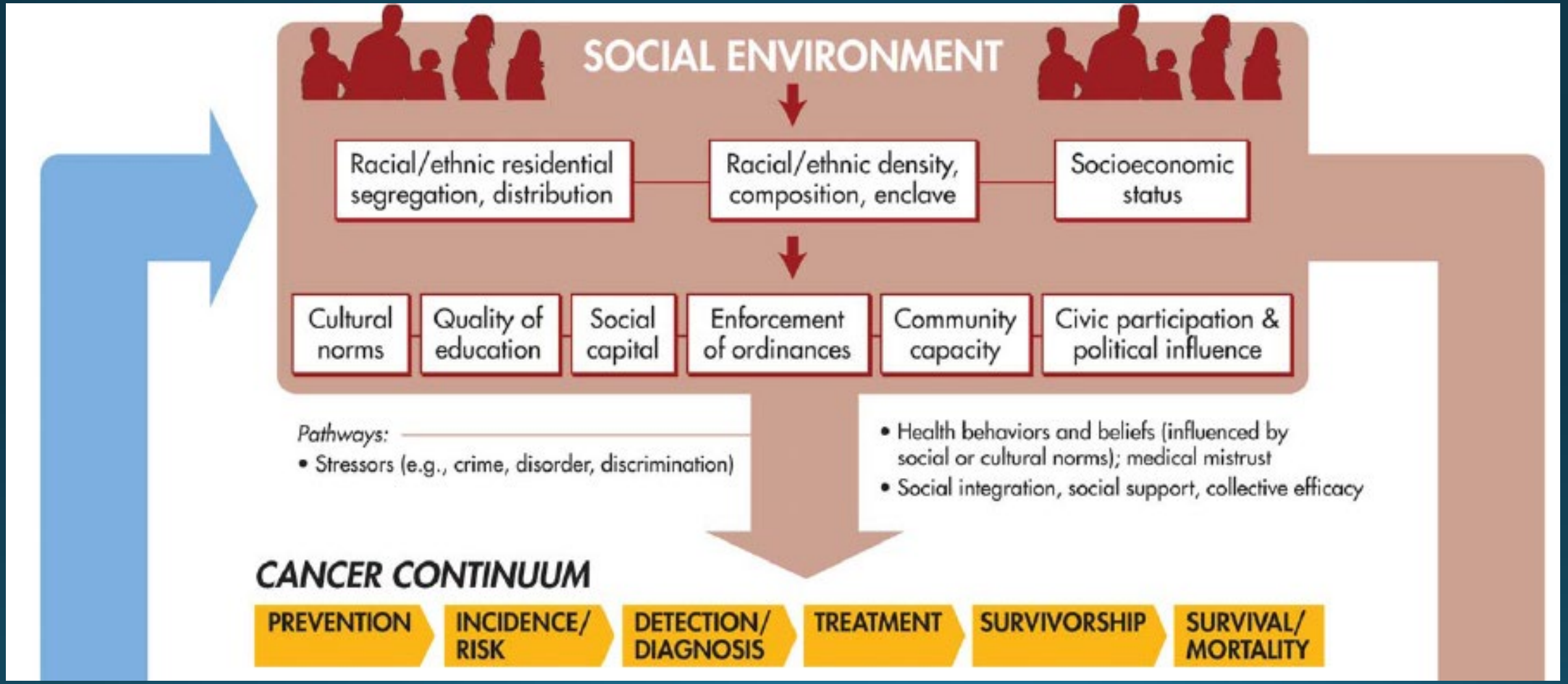
"Unnatural Causes. Place Matters." (PBS documentary, 2008)

Neighborhood context in cancer control

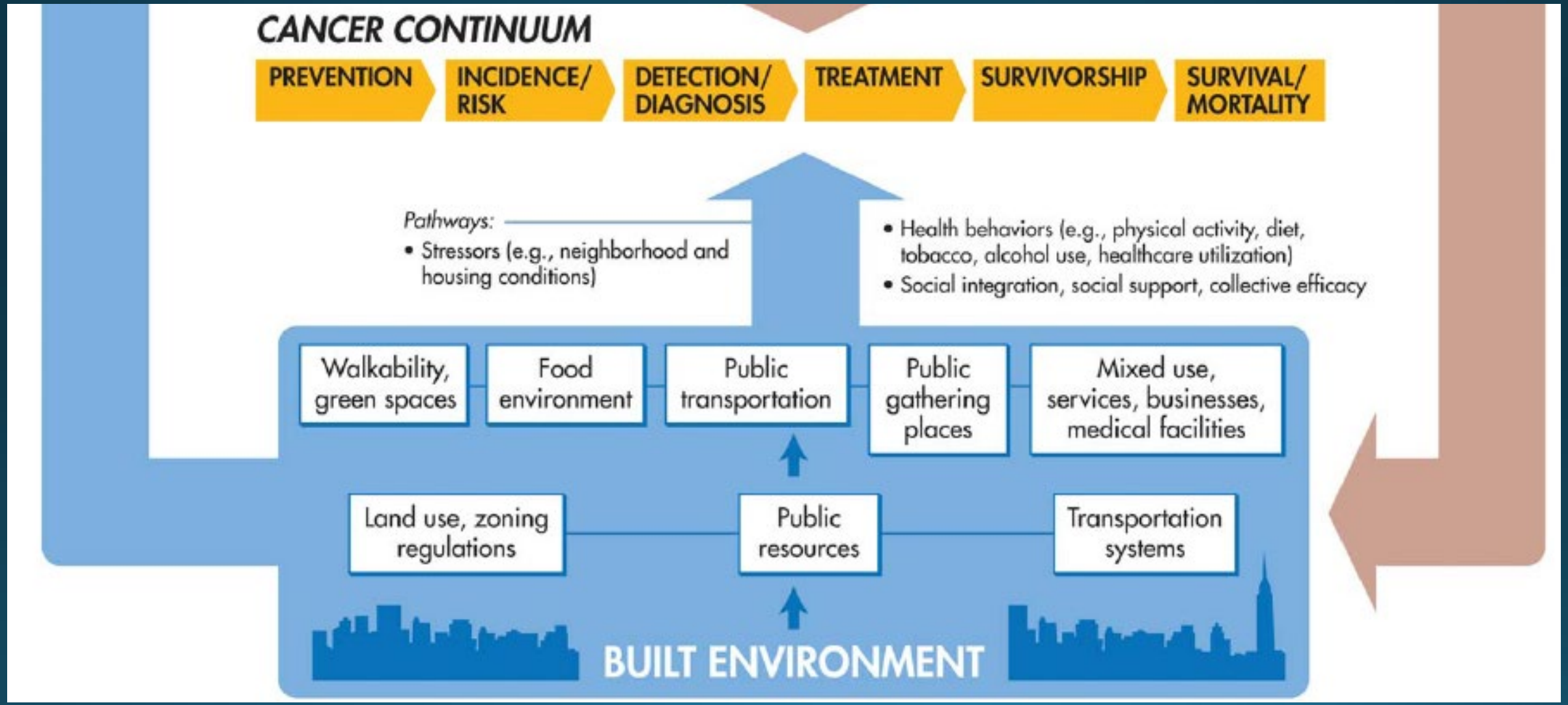
Gomez, DeRouen, et al. The impact of neighborhood social and built environment across the cancer continuum: current research, methodologic considerations, and future directions. Cancer 2015.



Neighborhood context in cancer control



Neighborhood context in cancer control



Measuring neighborhoods: Implications for cancer control

Identify neighborhood characteristics that work together to influence health—positively or negatively.

Design scalable, cost-effective interventions that address modifiable contextual factors with changes to policies or healthcare systems.

Examples of multilevel disparities research

Ethnic enclaves

Hispanic ethnic enclave

- Community characterized by having greater proportion of Hispanics, Hispanic immigrants, and adherence to Hispanic cultural mores
- Derived using principal components analysis of census block-group or tract-level data
- Index comprising census and American Community Survey (ACS) data on density of Hispanics, foreign-born Hispanic, Hispanic recent immigrants, Hispanic households that are linguistically isolated, Spanish-speaking residents

Neighborhood SES

- Derived using principal components analysis of census long form or ACS (5 yr) block group or tract-level data
- Multi-component index comprising data on income, education, poverty, unemployment, blue-collar workers, housing values, rental values
- Comparable to deprivation indices

Breast cancer in Hispanic women: role of ethnic enclaves in breast cancer risk

Invasive breast cancer risk by menopausal status: Neighborhoods and Breast Cancer Study

Immigration Factors	Pre-menopausal	Post-menopausal
	OR (95% CI)	OR (95% CI)
US-born, low enclave	1.0	1.0
US-born, high enclave	1.09(0.63-1.88)	0.75 (0.51-1.11)
Foreign-born, low enclave	0.92 (0.58-1.48)	0.84 (0.58-1.23)
Foreign-born, high enclave	0.93 (0.56-1.55)	**0.41 (0.28-0.61)**

Adjusted for age, study, BrCa family history, benign breast disease, age at menarche, parity, breast feeding, age at first full-term pregnancy, hormone contraceptive use, hormone therapy use, alcohol intake, BMI, physical activity, neighborhood SES, and block group clustering.

→Pre-menopausal: reduced risk among FB in enclaves explained by bca risk factors

Breast cancer in Hispanic women: role of ethnic enclaves in breast cancer risk

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→Pre-menopausal: reduced risk among FB in enclaves explained by bca risk factors

→Post-menopausal: reduced risk not explained by risk factors

→Synergistic effect of nativity & ethnic enclave

Immigrant paradox and cancer: Consistency of findings

- Across several cancer sites, being **foreign-born** and living in **ethnic enclaves** associated with:
  - lower breast cancer risk
  - confers survival advantage (lung, prostate, cervix)
  - effects are independent, and sometimes synergistic
- However, being foreign-born and living in enclaves associated with greater odds of late stage disease (breast & cervical cancer)

Immigrant paradox: possible mechanisms of ethnic enclaves

- Co-ethnic community support & collective efficacy, especially in times of need (e.g., disease)?
- More culturally and linguistically-tailored resources available in these communities?
- Greater access to culturally and linguistically-tailored healthcare resources?
- Retention of health-promoting cultural lifestyle and dietary behaviors?
- Greater access to ethnic (healthy? unhealthy?) foods

Implications for cancer control:

If we can identify the specific positive aspects of Hispanic ethnic enclaves, what works for otherwise disadvantaged immigrant communities, we can design scalable, cost-effective interventions to improve cancer outcomes.

Examples of multilevel disparities research

Intersectionality of social determinants of health

Intersectionality: Social determinants of health

Multiple axes of social injustice

Originating from Black feminist literature

Multiple social statuses shape life experiences and restrict upward mobility

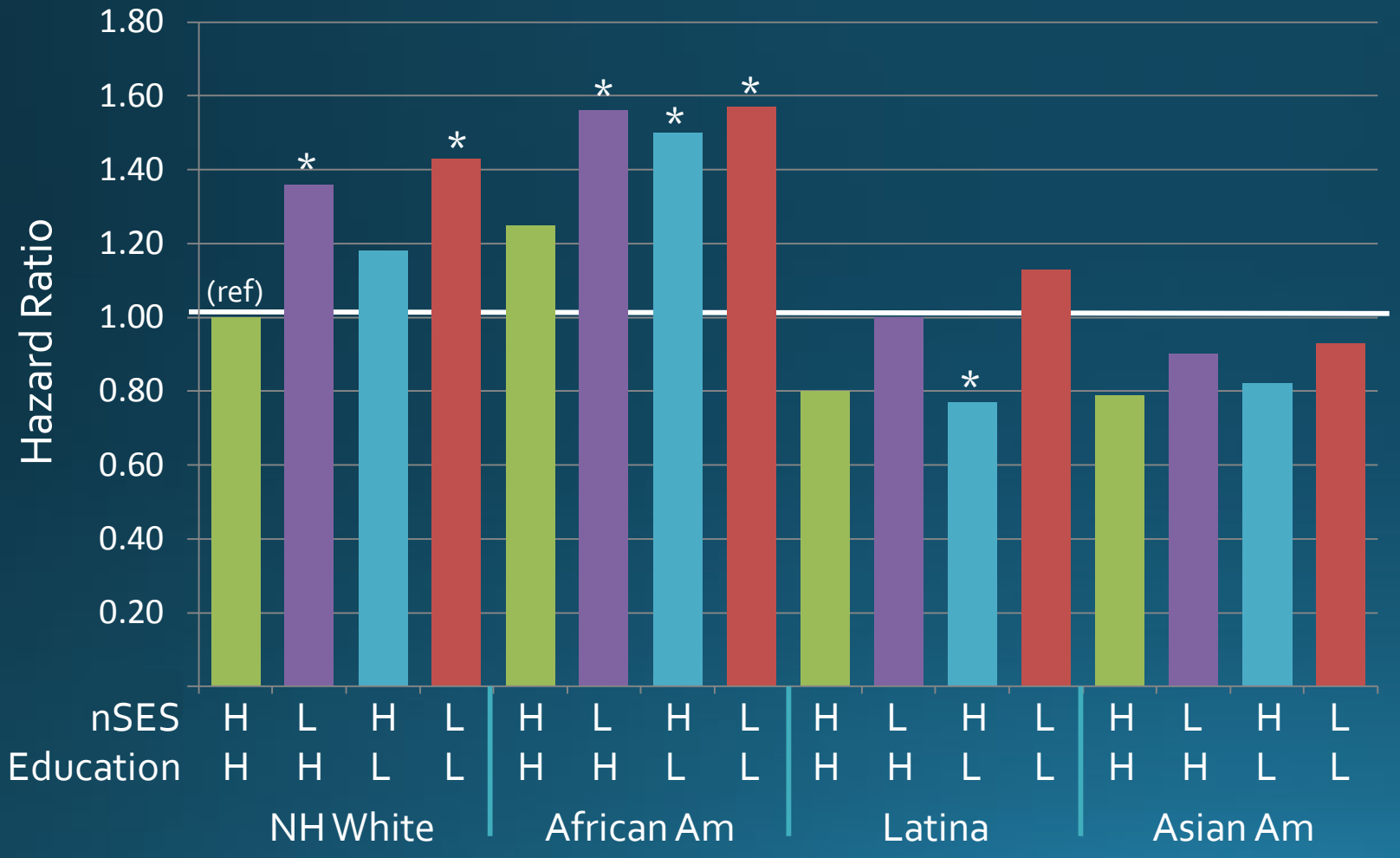
Social statuses upheld by institutional policies

Health inequities research: interactions between dimensions of social status

Green, Evans, Subramanian. Social Sci Med 2017
Williams et al. Health Services Research 2012
Crenshaw, K. In Critical race theory. 1993

Intersectionality: Breast cancer survival

California Breast Cancer Survivorship Consortium

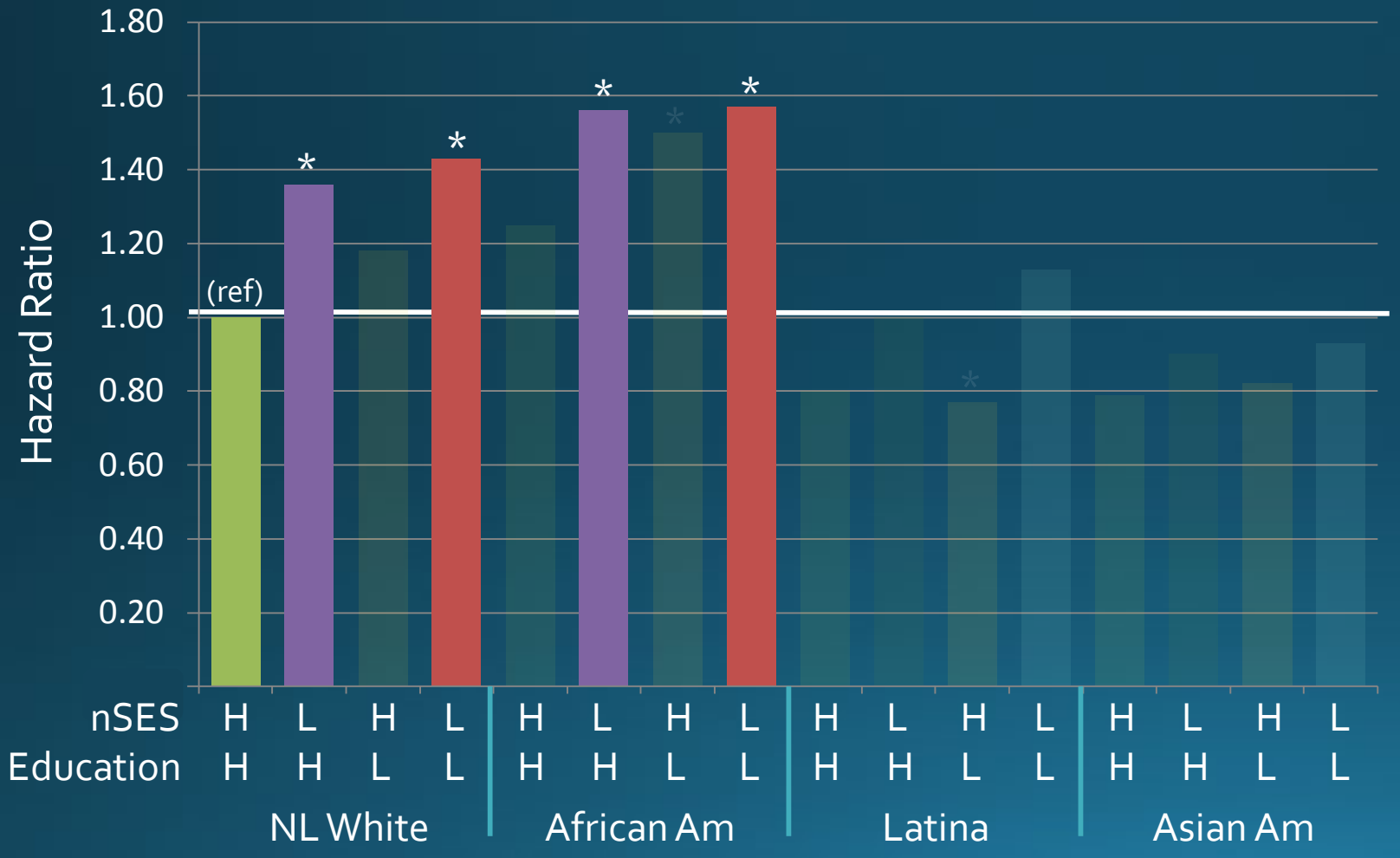


Shariff-Marco et al. J Comm Health 2015

Funding: CBCRP

Intersectionality: Breast cancer survival

California Breast Cancer Survivorship Consortium



Among Whites & African Americans with low nSES

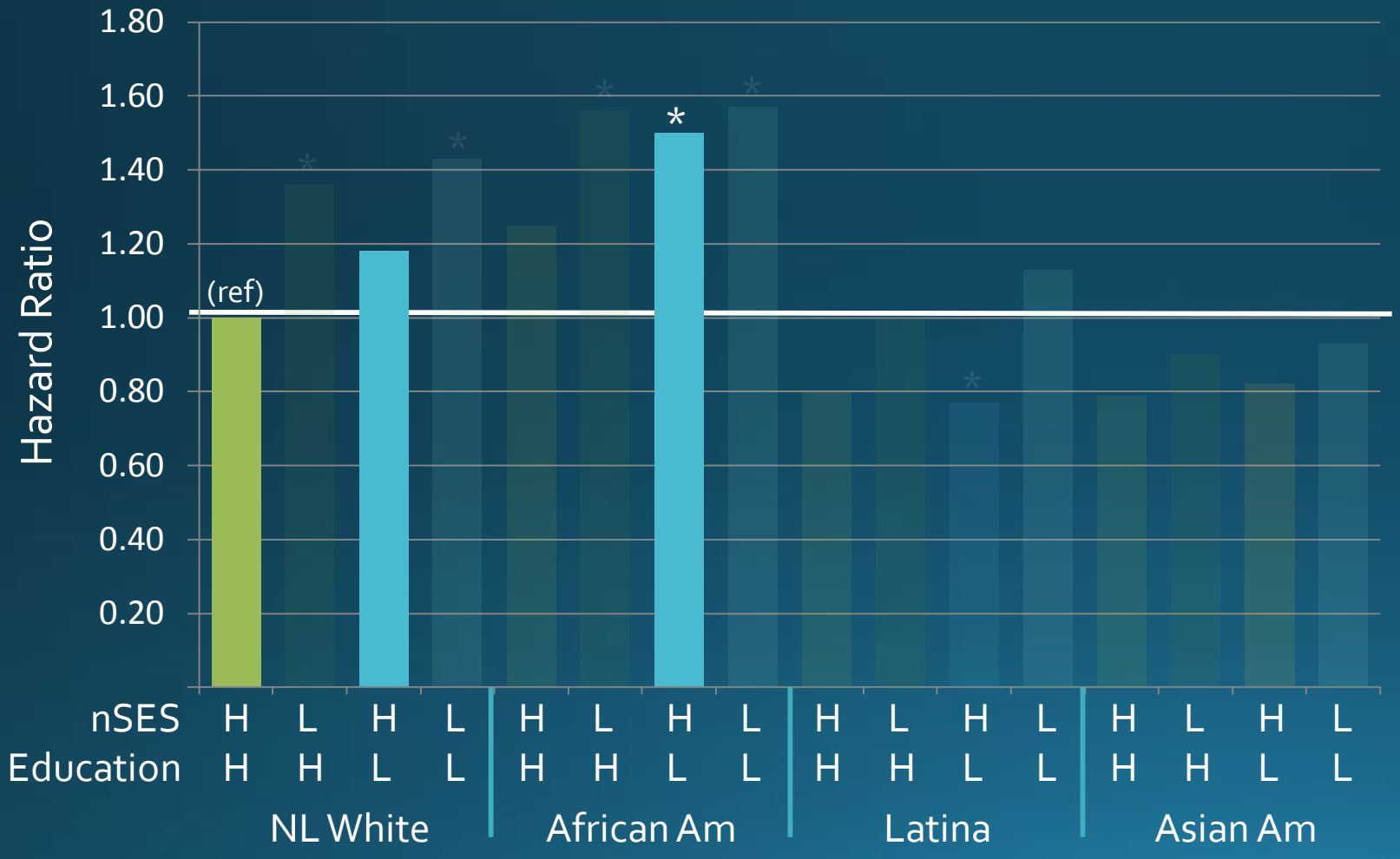
- Worse survival
- Regardless of education
- Regardless of race

Shariff-Marco et al. J Comm Health 2015

Funding: CBCRP

Intersectionality: Breast cancer survival

California Breast Cancer Survivorship Consortium



Among Whites & African Americans with <u>low nSES</u>

- Worse survival
- Regardless of education
- Regardless of race

African Americans with <u>low education & high nSES</u>

- Worse survival

Shariff-Marco et al. J Comm Health 2015

Funding: CBCRP

Intersectionality – Future directions

Increase awareness and consideration in research studies

Quantitative methods for describing effects of intersecting social determinants

Consortia—need large samples

Consider multiple contexts in which SDOH operate—work, school

Green, Evans, Subramanian. Soc Sci Med 2017

Advancing multilevel disparities research



Charting the Future of Cancer Health Disparities Research: A Position Statement From the American Association for Cancer Research, the American Cancer Society, the American Society of Clinical Oncology, and the National Cancer Institute

Blase N. Polite, Lucile L. Adams-Campbell, Otis W. Brawley, Nina Bickell, John M. Carethers, Christopher R. Flowers, Margaret Foti, Scarlett Lin Gomez, Jennifer J. Griggs, Christopher S. Lathan, Christopher I. Li, J. Leonard Lichtenfeld, Worta McCaskill-Stevens, and Electra D. Paskett

2017 Position Statement

Advancing multilevel disparities research

Polite et al. JCO, Cancer Res, CA Cancer J Clin 2017

2017 Position Statement

High quality tools and most granular data possible

Consortia gathering multilevel data for adequately-powered, hypothesis-driven research

Best-practice strategies to include underserved

Inclusion and support for community-engaged research

Health care systems accountable for serving underserved patients and intervening on system inadequacies

Polite et al. JCO, Cancer Res, CA Cancer J Clin 2017

High quality tools and granular data: Collecting sexual and gender minority status

Institute of Medicine (2011)
- State of knowledge regarding health disparities among SGM

Association of American Medical Colleges (2014)
- Report to advance healthcare of SGM

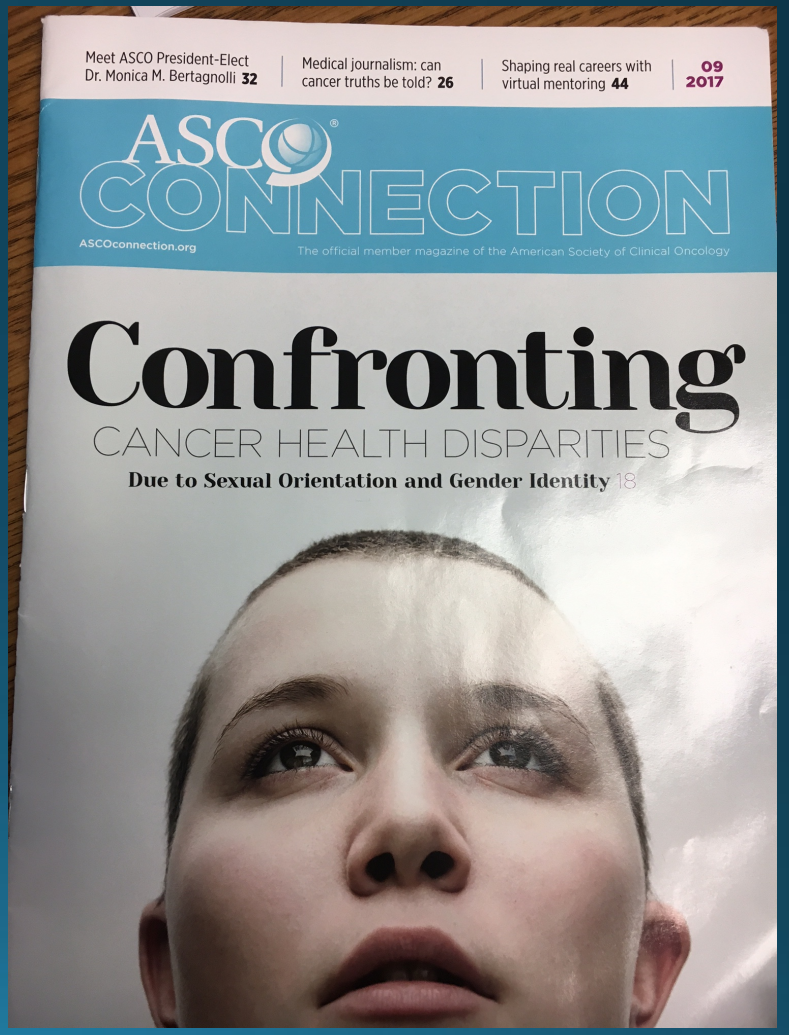
American College of Physicians (2015)
- Policy position paper

American Society of Clinical Oncology (2017)
- Position statement, J Clin Oncol

National Institutes of Health (2013)
- FY 2016-2020 SGM Strategic Plan

National Institute of Minority Health and Health Disparities (2016)
- Designated as health disparity population

Inclusion in Meaningful Use Guidelines
- Cahill et al., LGBT Health (2016)



High quality tools and granular data: Collecting sexual and gender minority status

In a nationwide survey of emergency department patients and clinicians…..

Patients

10% would refuse to provide

Individual care main benefit

Education of providers important

Clinicians

78% thought patients would refuse to provide

Improved patient-provider interactions main benefit

Maragh-Bass LGBT Health 2017, Haider JAMA Int Med 2017

High quality tools and granular data: Collecting sexual and gender minority status

Current landscape of data collection		
	Hospitals	**Physician offices**
Gender identity		
Sexual orientation		

Funding: National Cancer Institute

Gomez et al. Surveillance of cancer among sexual and gender minority populations: where are we and where do we need to go? Cancer in press.

High quality tools and granular data: Collecting sexual and gender minority status

Current landscape of data collection		
	Hospitals	**Physician offices**
Gender identity	52% only collect M/F	51% only collect M/F
Sexual orientation		

Funding: National Cancer Institute

Gomez et al. Surveillance of cancer among sexual and gender minority populations: where are we and where do we need to go? Cancer in press.

High quality tools and granular data: Collecting sexual and gender minority status

Current landscape of data collection		
	Hospitals	**Physician offices**
Gender identity	52% only collect M/F	51% only collect M/F
Sexual orientation	77% do not collect	84% do not collect

Funding: National Cancer Institute

Gomez et al. Surveillance of cancer among sexual and gender minority populations: where are we and where do we need to go? Cancer in press.

High quality tools and granular data: Collecting sexual and gender minority status

Hospitals

This needs to be collected more systematically

Our facility just recently began

Will soon begin collecting these data

We need questions like this added to our patient intake/registration form

High quality tools and granular data: Collecting sexual and gender minority status

Hospitals

- This needs to be collected more systematically
- Our facility just recently began
- Will soon begin collecting these data
- We need questions like this added to our patient intake/registration form

Physician offices

- irrelevant
- not necessary for my patients' care
- too intrusive
- Only recorded if it is related to the patient's medical condition

High quality tools and granular data: Collecting sexual and gender minority status

https://cancerregistry.ucsf.edu/demographic-toolkit

Funding: National Cancer Institute

Gomez et al. Surveillance of cancer among sexual and gender minority populations: where are we and where do we need to go? Cancer in press.

High quality tools and granular data

- Standard set of SDOH measures
  - All research, registries
  - Including home address for neighborhood & geospatial factors
- Self-report
  - Race & ethnicity
  - Gender and sexual orientation
- Education on importance and rationale of collecting SDOH
- Reporting standards

Polite et al., JCO 2017

Multilevel consortia: Small populations

In research of small subpopulations…

"…the size, dispersion, or accessibility of the population of interest makes it difficult to obtain adequate sample sizes to test specific research questions"

-Srinivasan. AJPH 2015. "Small is essential"

Srinivasan. AJPH 2015. "Small is essential".

Advancing multilevel disparities research of SDOH: Recommendations

- Cancer disparities arise from multilevel factors, including multilevel SDOH
  - Collect address data & integrate neighborhood context
- Data needs
  - Standardized measures
  - Granular data
  - Training for healthcare professionals, Toolkits
- Consider small populations where appropriate
  - Consortia comprising multilevel data
  - Integrative data analysis

From multilevel research to cancer control

SF CAN

"The San Francisco Cancer Initiative (SF CAN) is a collaborative effort to reduce cancer in San Francisco by engaging health care systems, government, community leaders, and residents."

sfcancer.org

Hiatt RA, et al. Health Affairs 2018

SF CAN

- An integrated, cross-sector collaboration bringing together the SFDPH, UCSF, major health systems, and community coalitions to exert collective impact
- Comprises 5 task forces: breast, colorectal, liver, prostate, and tobacco-caused cancers
- Focuses on racial and ethnic minorities and socially disadvantaged, and on reducing inequities in prevention, screening rates, access to quality healthcare, and outcomes.

Calculating breast cancer burden in SF neighborhoods

- Cancer registry, population estimate (incidence denominator), and population characteristic data available at census tract level
  - N=199 census tracts, 583 block groups in SF
- Traditionally-defined SF neighborhoods do not map to census tract boundaries
- SFDPH redefined neighborhoods to match to census tracts → 41 neighborhoods, too small
- Supervisor districts (N=11) do not map to any administrative boundaries
- MSSAs (Medical service study area, OSHPD), not meaningful

Calculating breast cancer burden in SF neighborhoods

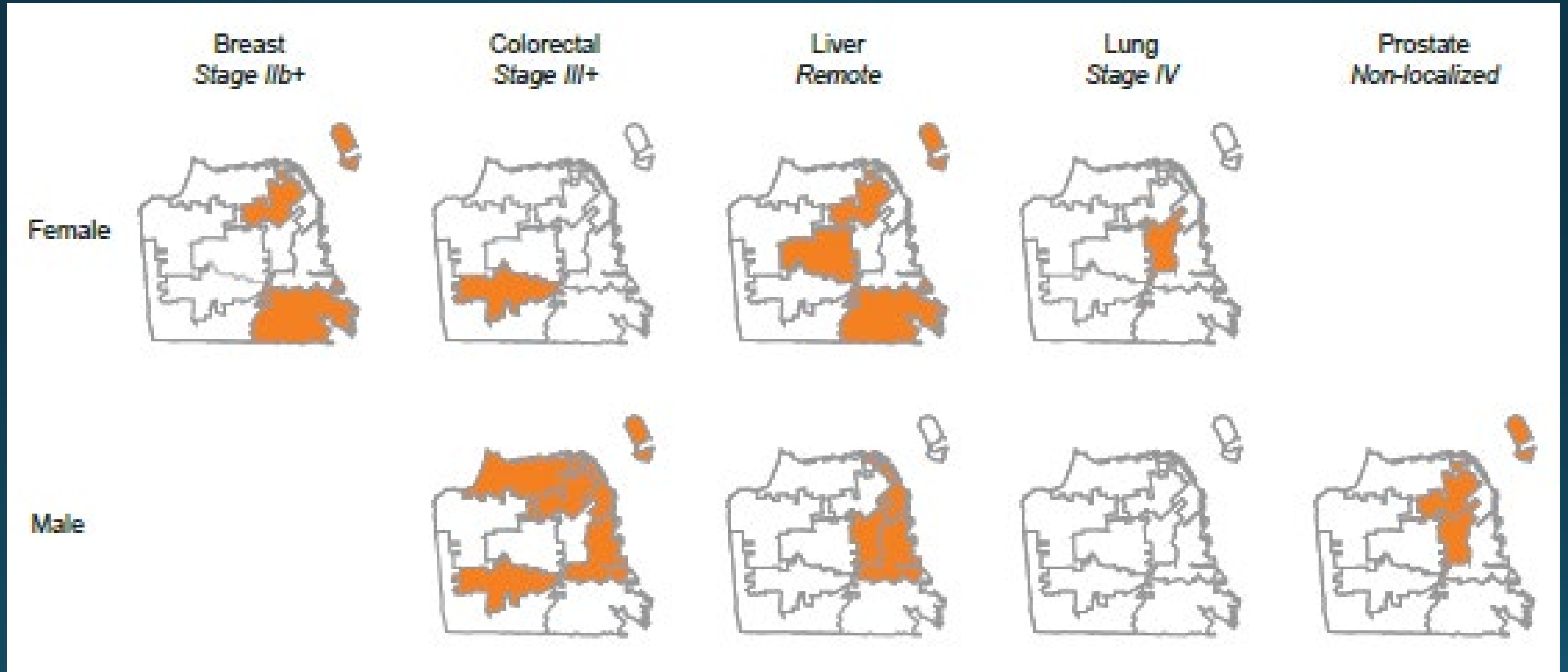
- **Challenge**: re-classify SF neighborhoods so that they are:
  - Based on administrative boundaries
  - Large enough to create stable statistical estimates
  - Meaningful
- Feedback/ground-truthing from Task Force Steering Committee, esp community groups
- Neighborhood classification based on census block groups
  - Race/ethnicity composition & neighborhood SES
  - 9 new neighborhoods

SF CAN neighborhoods

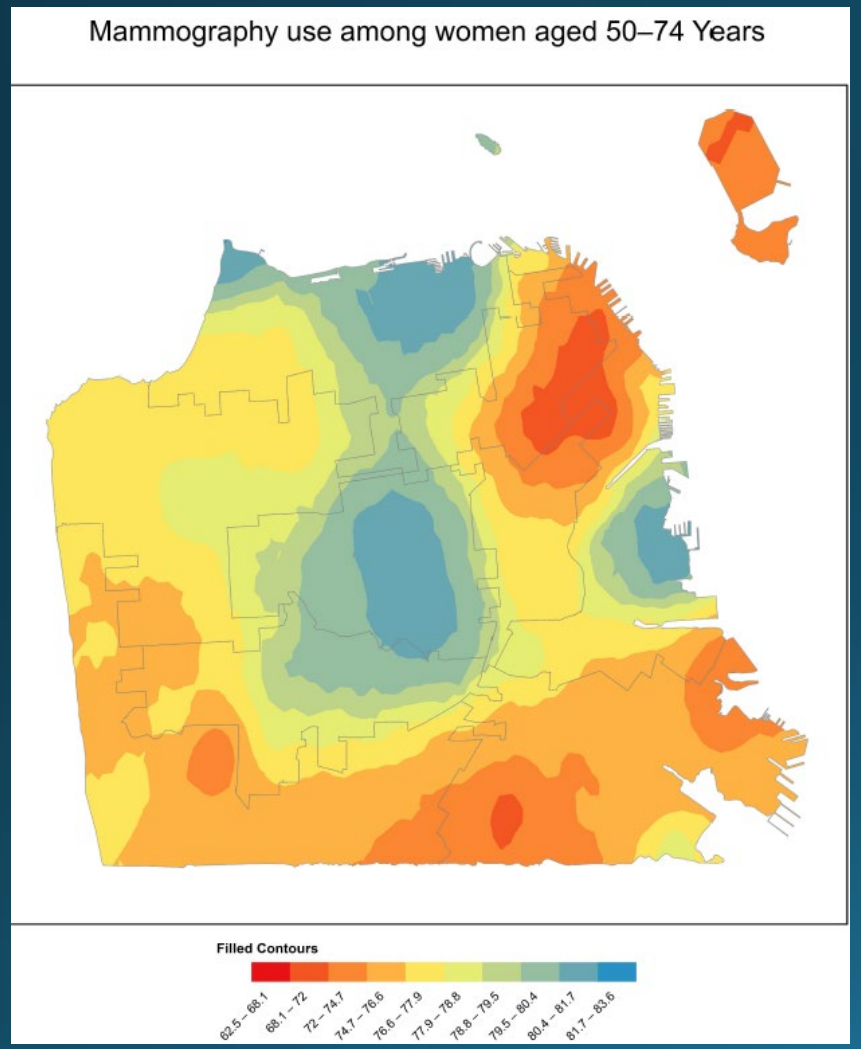


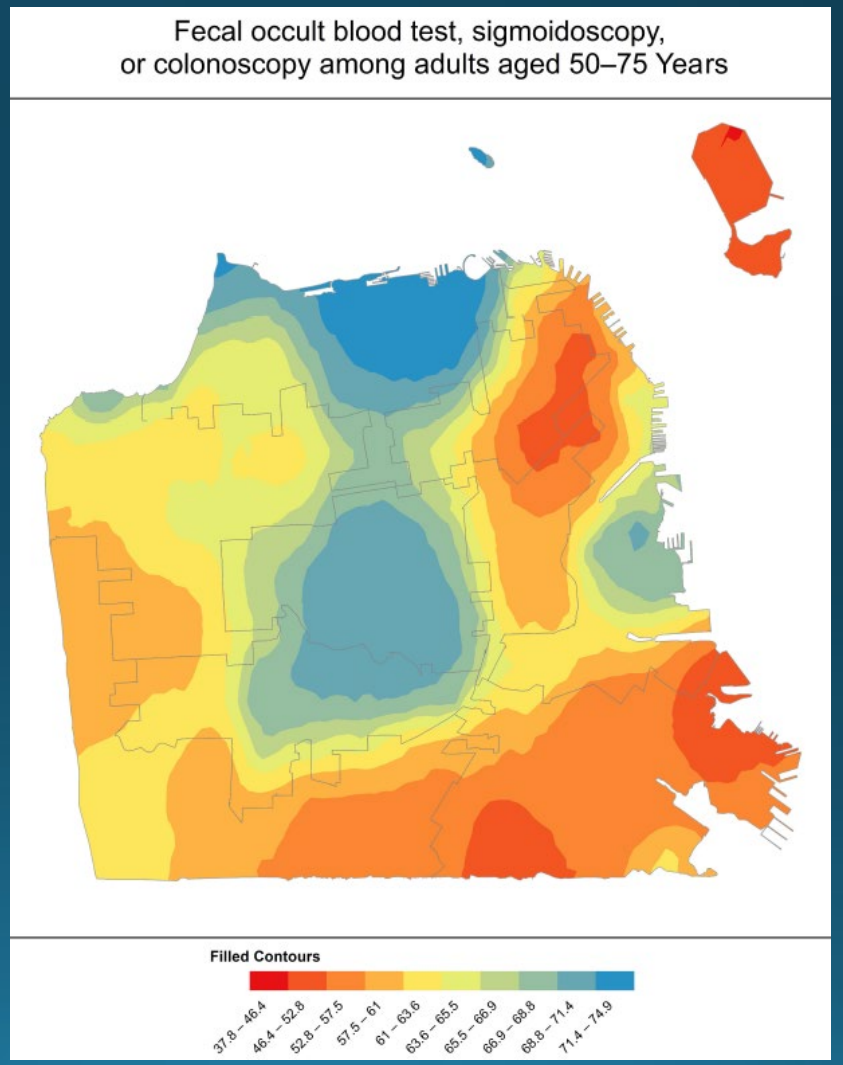
1. **Center-South**
   West Portal/Diamond Heights/Glen Park
2. **Center-West**
   Inner Sunset/Haight Ashbury/Castro
3. **Center-East**
   Mission/Bernal Heights
4. **East**
   North Beach/Financial District/South of Market/Mission Bay/Potrero Hill
5. **Southeast**
   Bayview/Hunters Point
6. **Southwest**
   Lakeshore/Excelsior
7. **West**
   Sunset/Richmond
8. **North**
   Presidio/Marina/Pacific Heights
9. **Northeast**
   Downtown/Civic Center/Chinatown/ Nob Hill/Western Addition

SF CAN: neighborhoods with % late stage higher than CA average



SF CAN: cancer screening





Data from 500 Cities (CDC)

Cancer data: small area mapping

- Allows stakeholders to focus and target interventions
- Currently developing web portal to facilitate interactive mapping of cancer incidence and population SDOH data for small areas
- Political boundaries

Translating multilevel data to cancer control

- Mandate systematic collection of SDOH data
- Promote health in all policies
- Train providers to recognize and incorporate SDOH into clinical care
- Engage with communities to understand vulnerability and resiliency factors

Final thoughts

Social status is a marker of institutional policies

- Addressing will require structural change

Resources & choices limited by social and built environment

- Need to recognize neighborhood contexts

Intersectionality of SDOH shape life experiences and restrict opportunities for upward mobility

- Recognize & assess intersectionality of multiple SDOH

"…it is our collective hope that in this period of cancer research when significant breakthroughs are being discovered, there will be opportunities to apply this new knowledge to all populations, and thus eliminate cancer health disparities for current and future generations."

Polite et al. JCO, Cancer Res, CA Cancer J Clin 2017

Thank You!

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DREA.I.I.LAB

DREAM Lab – Disparities research from environments and -omics