# Place & Health: Is Your Zip Code More Important Than Your Genetic Code?

Bernard Guyer Lecture
October 4, 2015
Rochester, NY

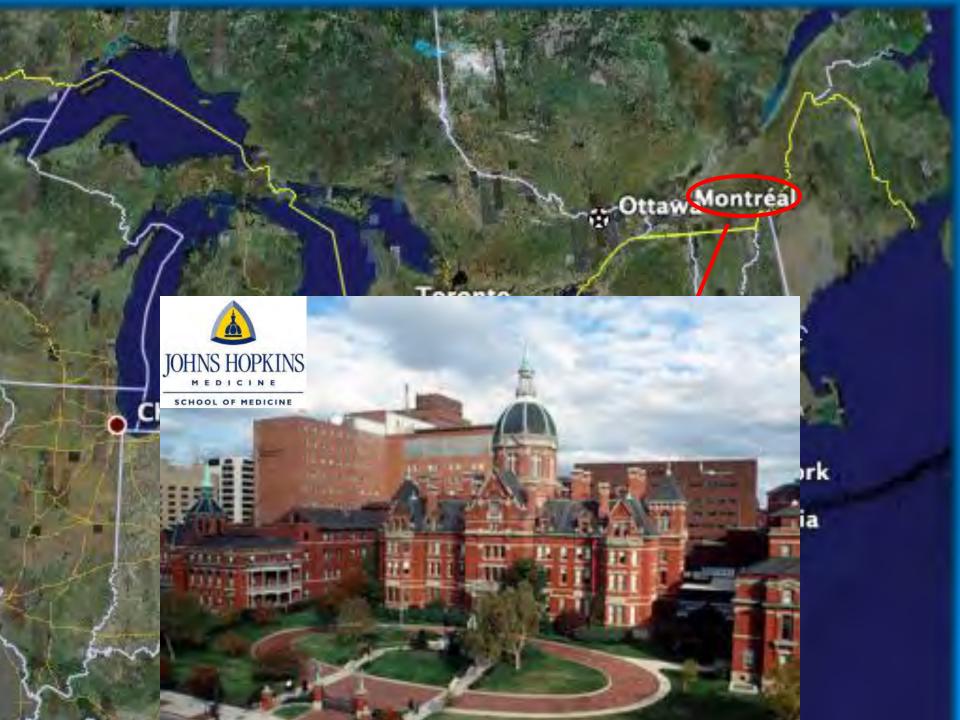
Tony Iton, M.D., J.D., MPH

> I will say then that I am not, nor ever have been, in favor of bringing about in any way the social and political equality of the white and black races — that I am not, nor ever have been, in favor of making voters or jurors of negroes, nor of qualifying them to hold office, nor to intermarry with white people; and I will say in addition to this that there is a physical difference between the white and black races which I believe will forever forbid the two races living together on terms of social and political equality. And inasmuch as they cannot so live, while they do remain together there must be the position of superior and inferior, and I as much as any other man am in favor of having the superior position assigned to the white race.

### - Abraham Lincoln 1858

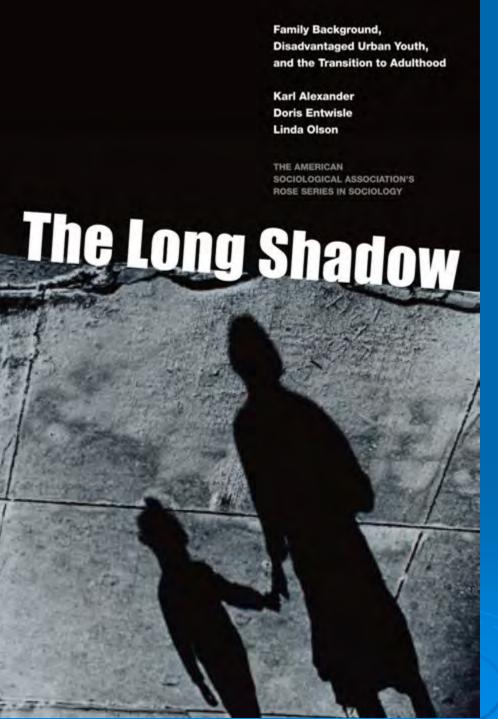
# **Why Place Matters**









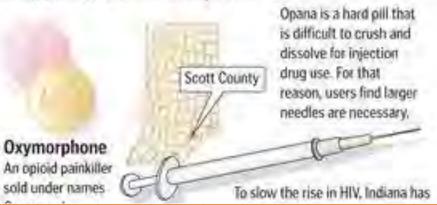


- Almost none of the children from lowincome families made it through college.
- Among those who did not attend college, white men from lowincome backgrounds found the best-paying jobs.
- "The implication is where you start in life is where you end up in life," Alexander said. "It's very sobering to see how this all unfolds."

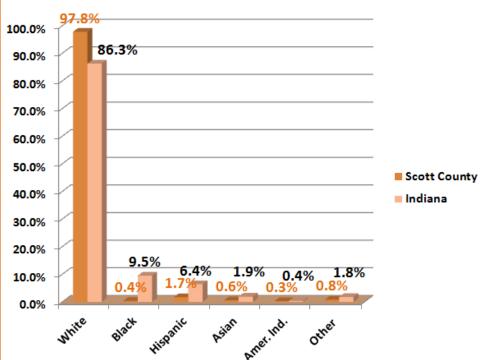


### 142 cases of HIV linked to illegal drugs

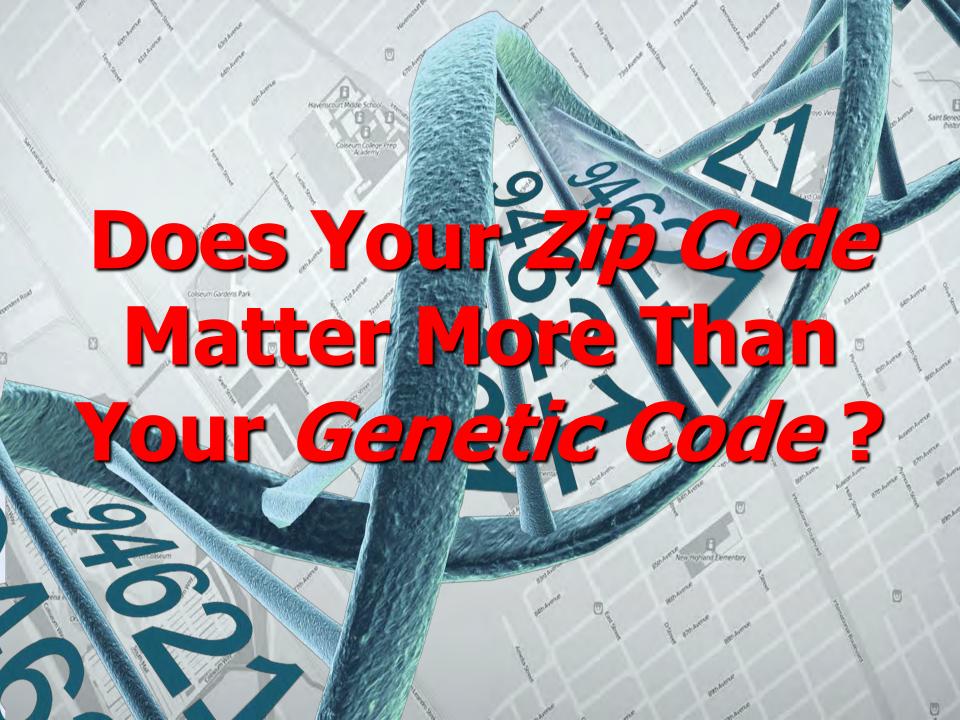
Many cases in Scott County are traced to people injecting Opana, a prescription painkiller similar to heroin and sold in pill form.

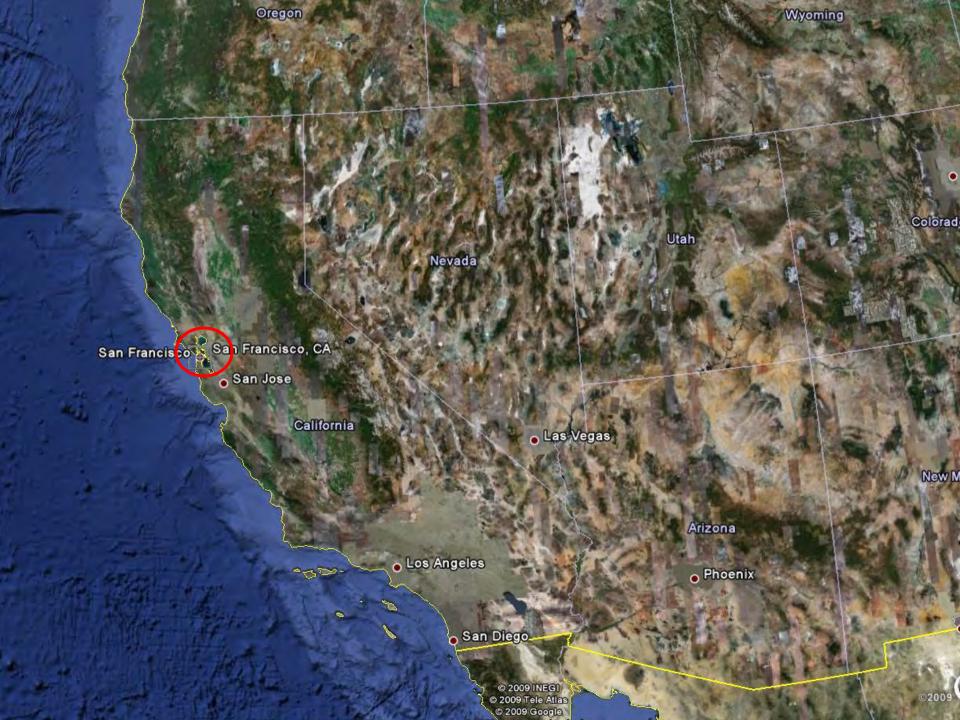


# Racial demographics of Scott County and Indiana (2013)







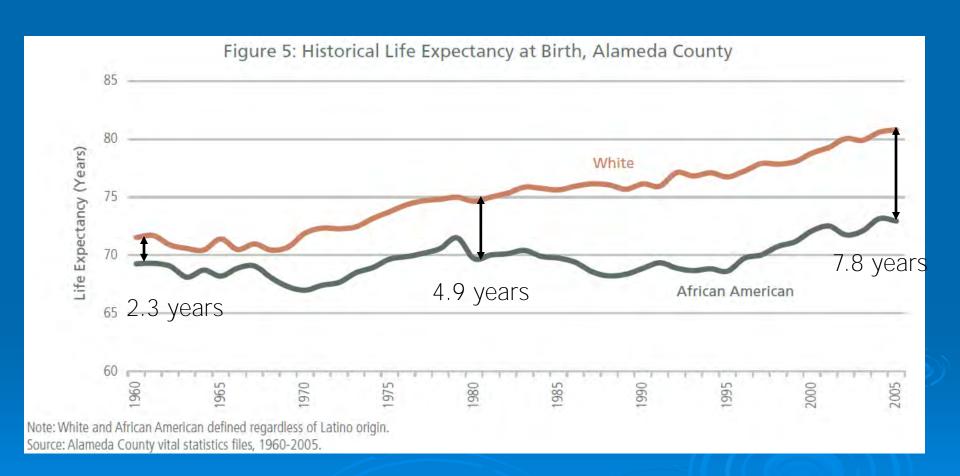




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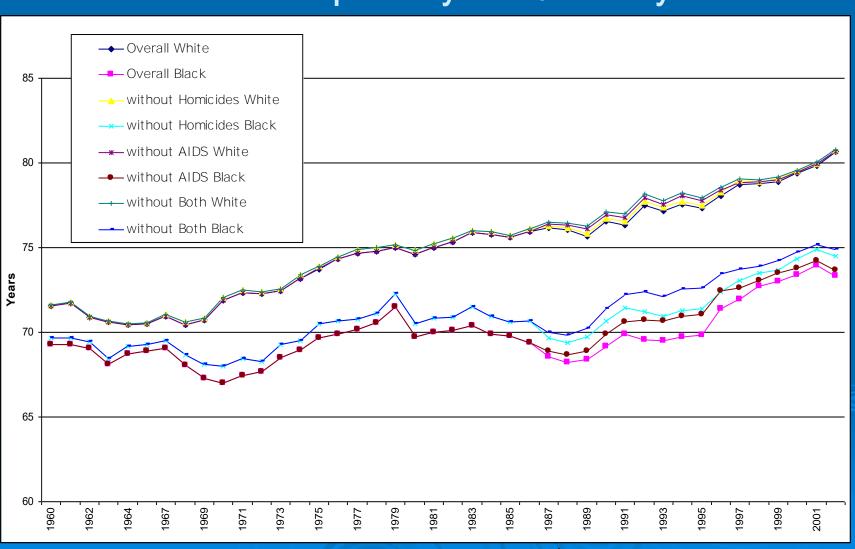
# Race and Racism Matters:

### Health Inequities by Race/Ethnicity

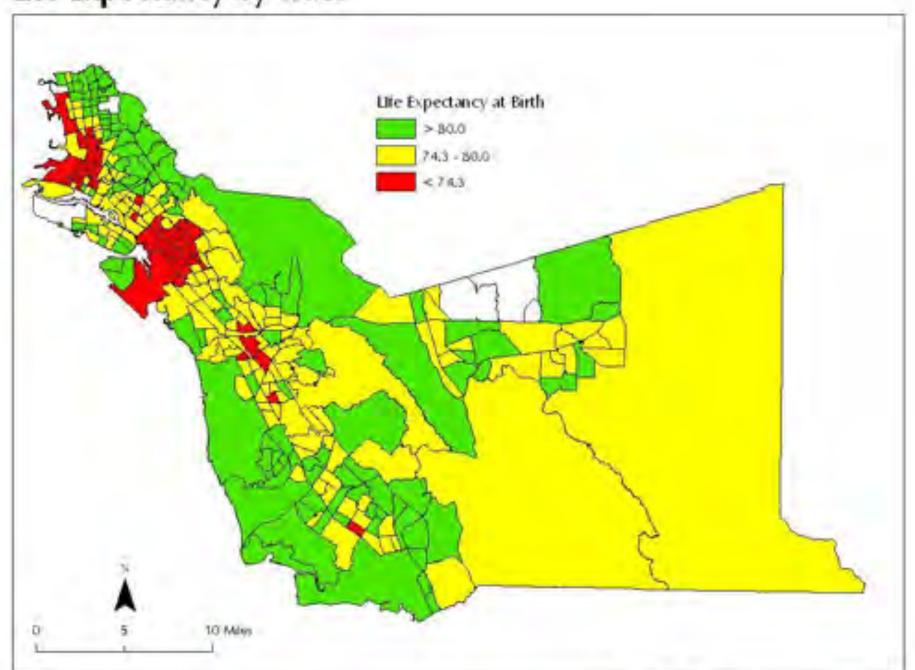


## Race and Racism Matters:

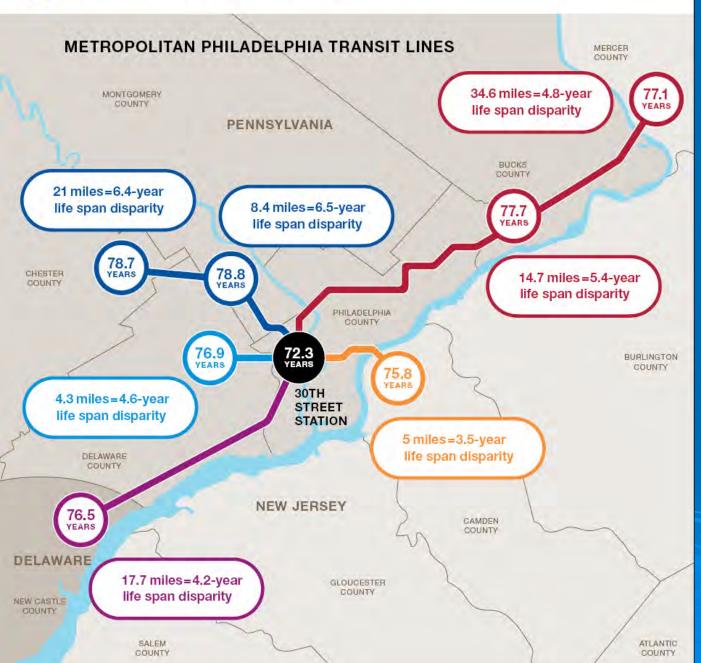
Health Inequities by Race/Ethnicity

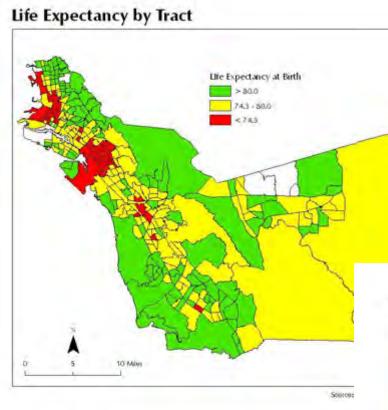


## Life Expectancy by Tract

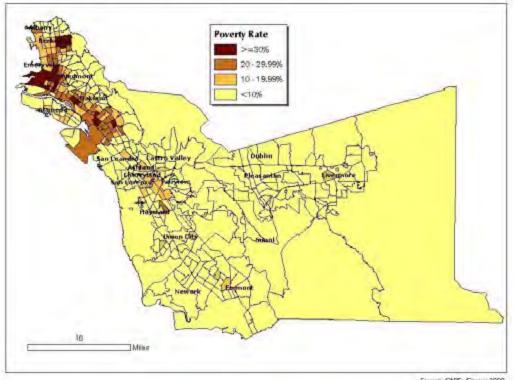


#### Life Expectancy in Years by Community Statistical Area, Life Expectancy by Tract Baltimore City, 2002-2006 83 or more years 79 years to < 83 years 75 years to < 79 years < 75 Years Anoka County Age adjusted All Cause Hortality rate by Health Planning Area King County Washington 5-year average, 2002-2006 Hennepin Ramse County Legend Life Expectancy in years November 2013 24 Life expectancy in years, male fable of comerts 62.5 - 66.6 Battimore City 2003-2006 Alverage Life Expectancy was 79.6 years. 66.7 - 70.7 Washine County 70.8 - 74.7 74.8 - 78.8 Betwore City hearth Department analysis using safe from the Maryland Department of Hearth and Mental Inglanets Vital Statistics Assimilations Community Statistics Assimilation Anals (CSAs): Outside of Sattemore resignation outside that were oriented along certain from Societies in from SS CSAs. 78.9 - 82.9 Carver 65.22 - 18.21 MR 22 - 71 00 71.02 - 73.10 79.11 - 79.49 PETS-94-78-16 Scott County Dakota County Life Expectancy (years) 608 - 742 723-168 743 - 927 967-827 South Brons DPHO Boundary 9.2 5.7 2.5 7.8 xted Rates are age-adjusted. Los Angeles County A County average = 80.3 years Sources: Bureau of Vital Statistics, NYC DOHMH, 2006;

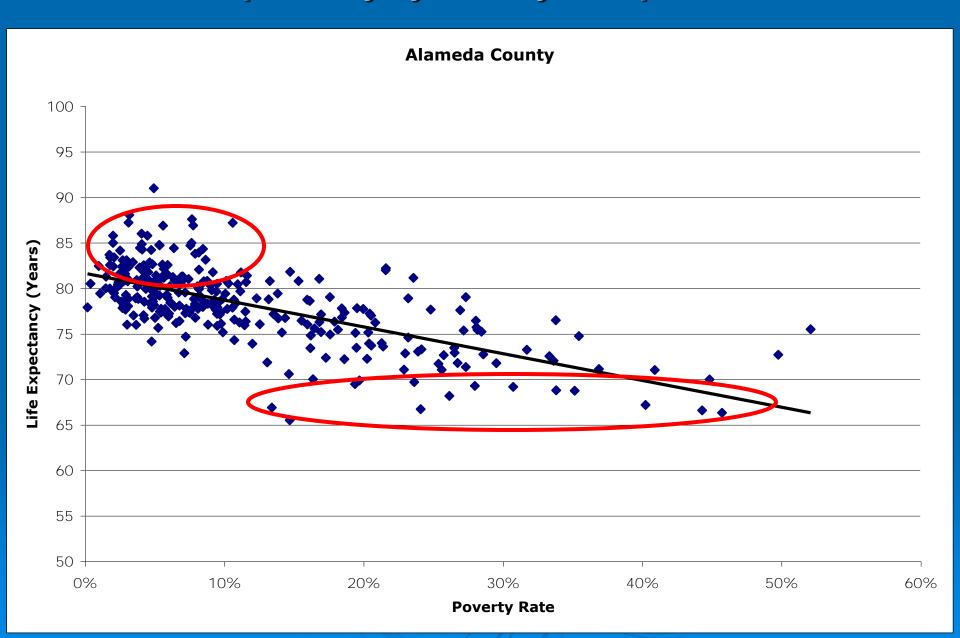


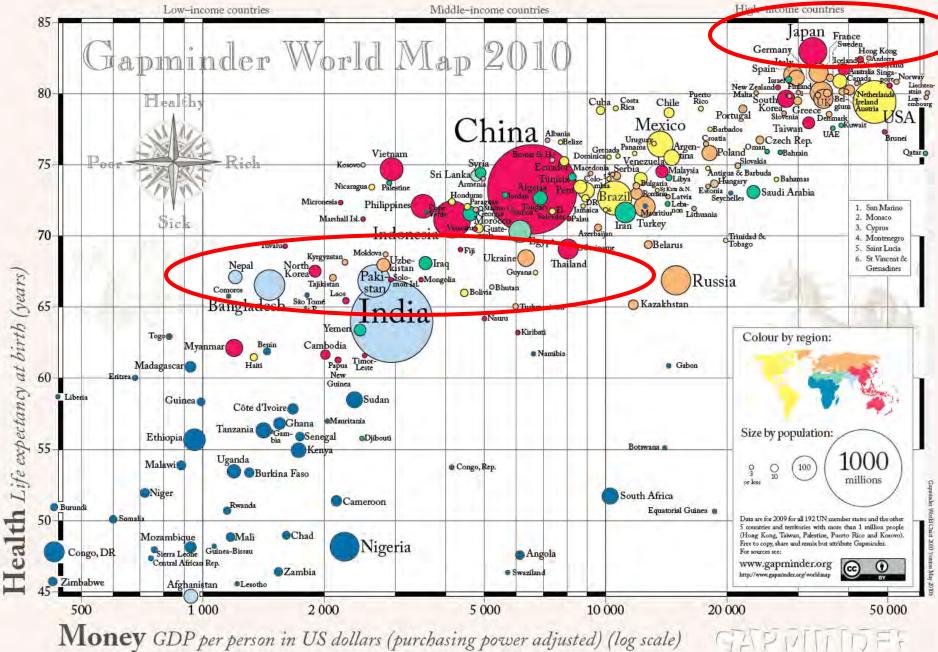


### **Alameda County Poverty**



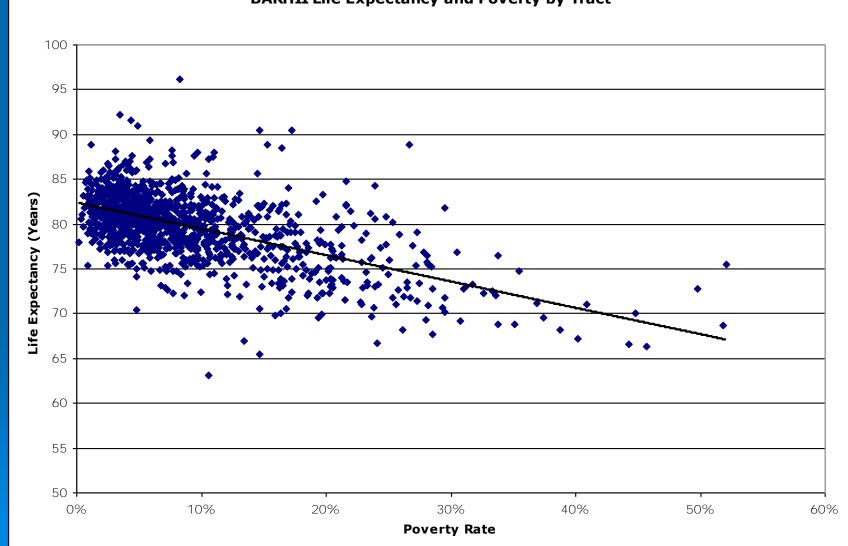
## **Life Expectancy by Poverty Group 2000-2003**



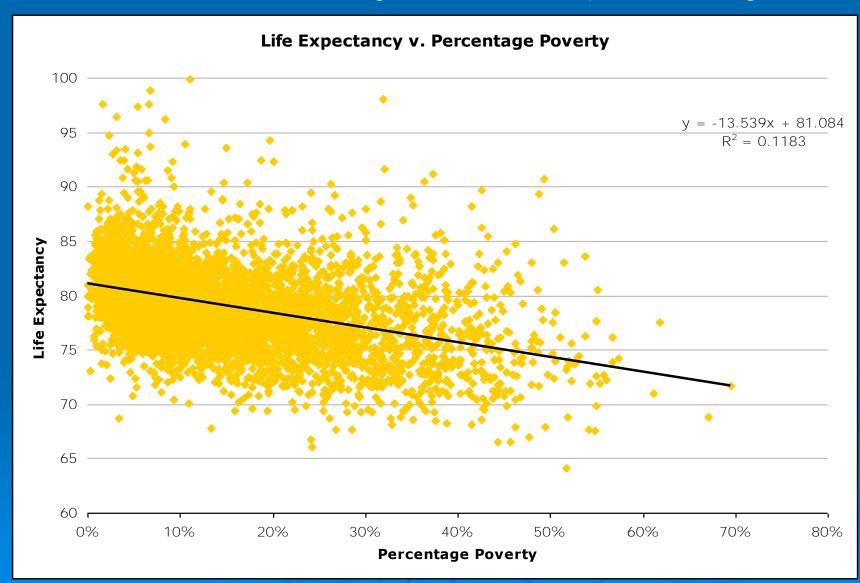


# Bay Area Poverty vs. Life Expectancy





# California Poverty vs. Life Expectancy



# Cost of Poverty in San Francisco Bay Area

- Every additional \$12,500 in household income buys one year of life expectancy
- Benefit appears to plateau at household incomes above \$150,000)
- Similar gradients in Baltimore, NYC, Philadelphia, Hennepin County (Minneapolis-St. Paul), Colorado, California, AND Cuyahoga County (\$6304/year of life)

# The shape of health to come: prospective study of the determinants of 30-year health trajectories in the Alameda County Study

George A Kaplan,1\* Peter T Baltrus2 and Trivellore E Raghunathan3

A 30 year longitudinal study of nearly 7000 Alameda County residents from 1965 forward. Those residents with household income 1 SD above mean were 25% less likely to die prematurely, 1 SD below mean were 35% more likely to die early.





### SPECIAL REPORT

Volume 352:1138-1145 <u>March 17, 2005</u> Number 11

# A Potential Decline in Life Expectancy in the United States in the 21st Century

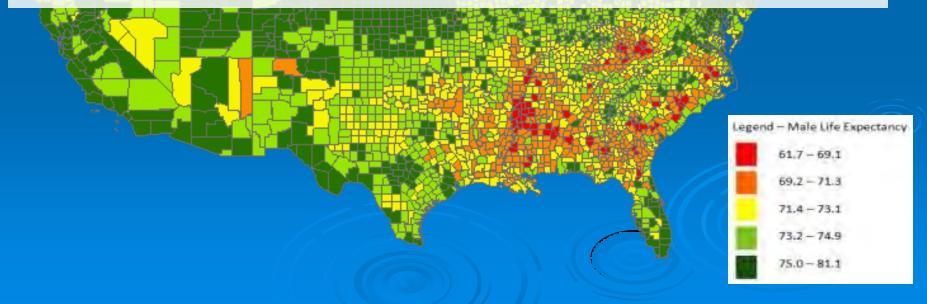
S. Jay Olshansky, Ph.D., Douglas J. Passaro, M.D., Ronald C. Hershow, M.D., Jennifer Layden, M.P.H., Bruce A. Carnes, Ph.D., Jacob Brody, M.D., Leonard Hayflick, Ph.D., Robert N. Butler, M.D., David B. Allison, Ph.D., and David S. Ludwig, M.D., Ph.D.

### **ABSTRACT**

Forecasts of life expectancy are an important component of public policy that influence age-based entitlement programs such as Social Security and Medicare. Although the Social Security Administration recently raised its estimates of how long Americans are going to live in the 21st century, current trends in obesity in the United States suggest that these estimates may not be accurate. From our analysis of the effect of obesity on longevity, we conclude that the steady rise in life expectancy during the past two centuries may soon come to an end.

# US Male Life Expectancy 1987-2007

Between 2000 and 2007, more than 80% of US counties fell in standing against the average of the 10 nations with the best life expectancies in the world, known as the international frontier.-IHME





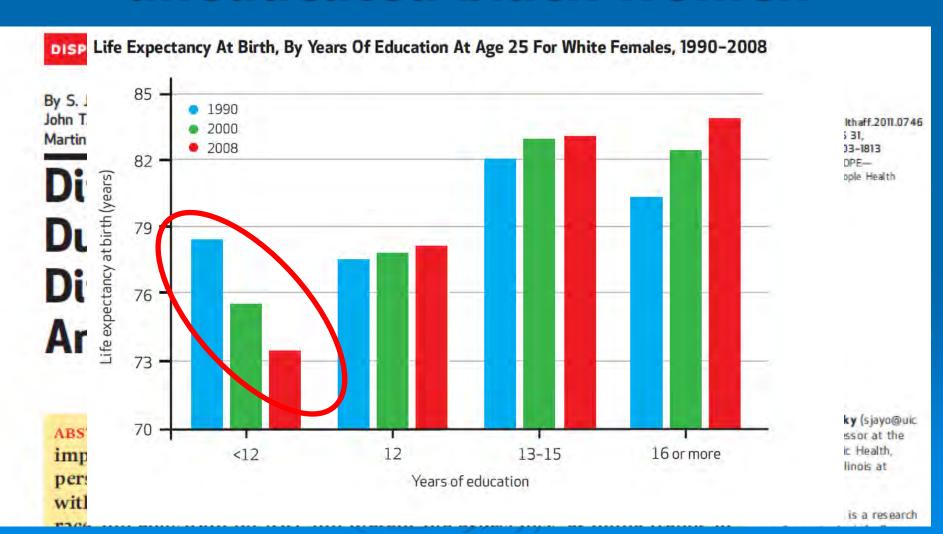
# Geographic and Racial Variation in Premature Mortality in the U.S.: Analyzing the Disparities

Mark R. Cullen<sup>1\*</sup>, Clint Cummins<sup>2</sup>, Victor R. Fuchs<sup>1,2</sup>

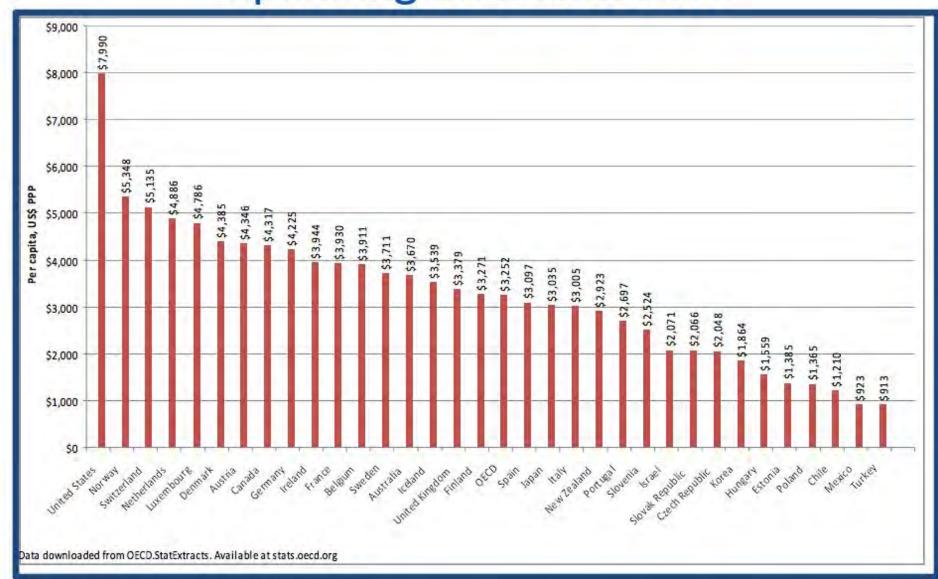
1 General Medical Disciplines, Stanford University School of Medicine, Stanford, California, United States of America, 2 Departments of Economics and Health Research and Policy, Stanford University, Stanford, California, United States of America

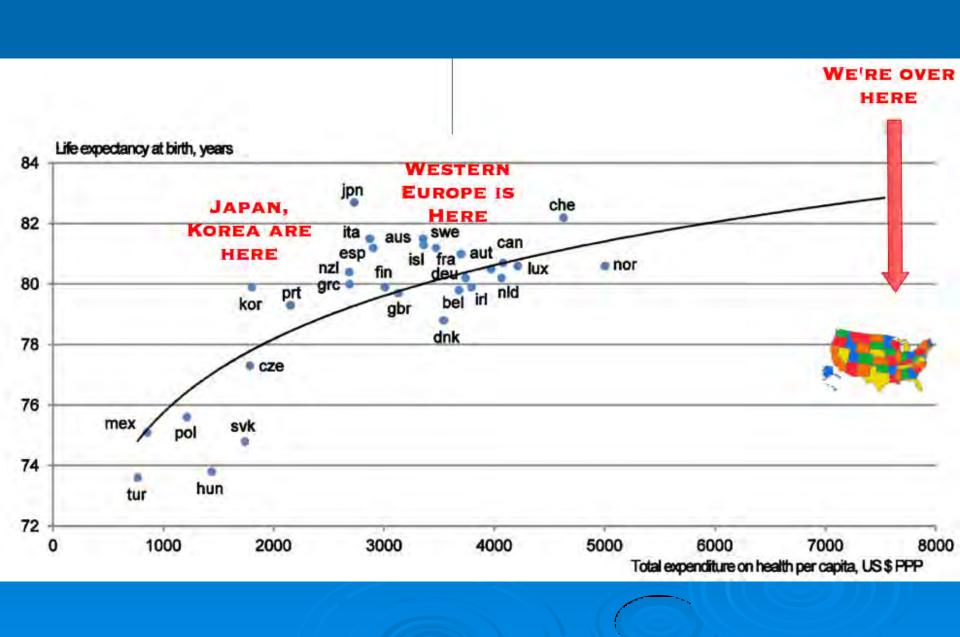
"Geographic and racial disparities," said first author Mark Cullen, MD, "are best understood as related to disparities in education, occupations and the like, which are strongly associated with outcomes in every county we studied, whether it was large, small, urban, rural, Southern or not."

# Life span for uneducated white women now lower than that of uneducated black women

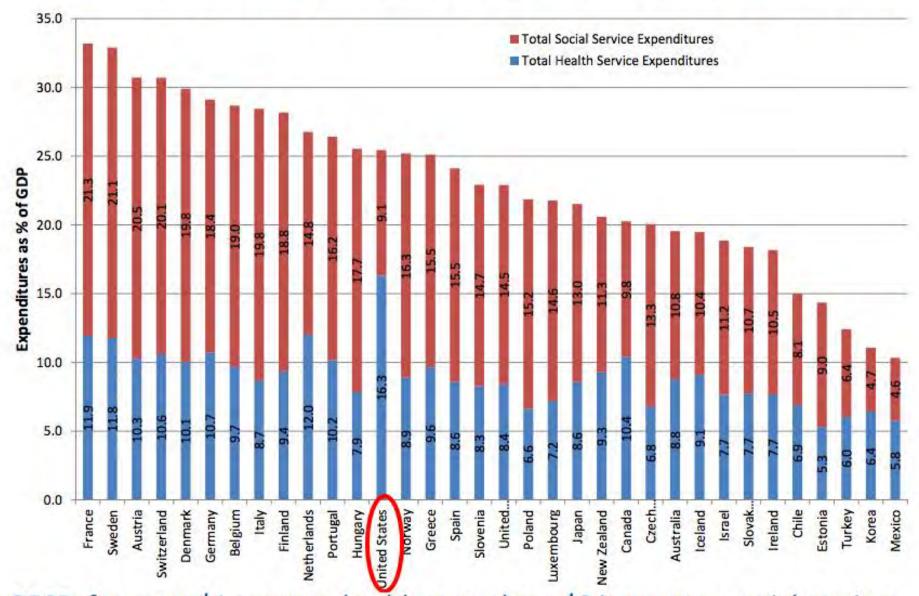


# Spending on health care





# Total health care investment in US is less



In OECD, for every \$1 spent on health care, about \$2 is spent on social services In the US, for \$1 spent on health care, about 55 cents is spent on social services

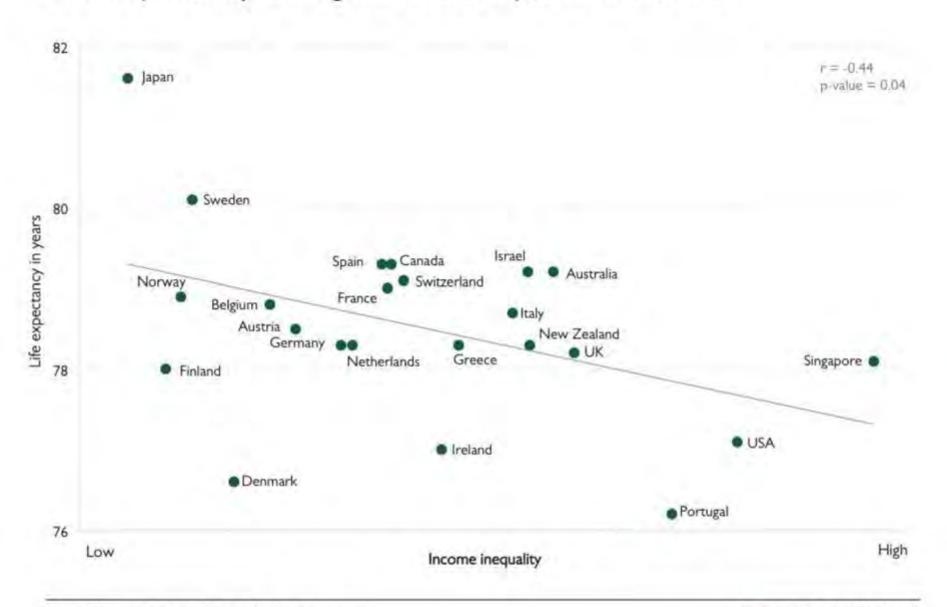
# **Findings**

The ratio of social to health spending was significantly associated with better health outcomes:

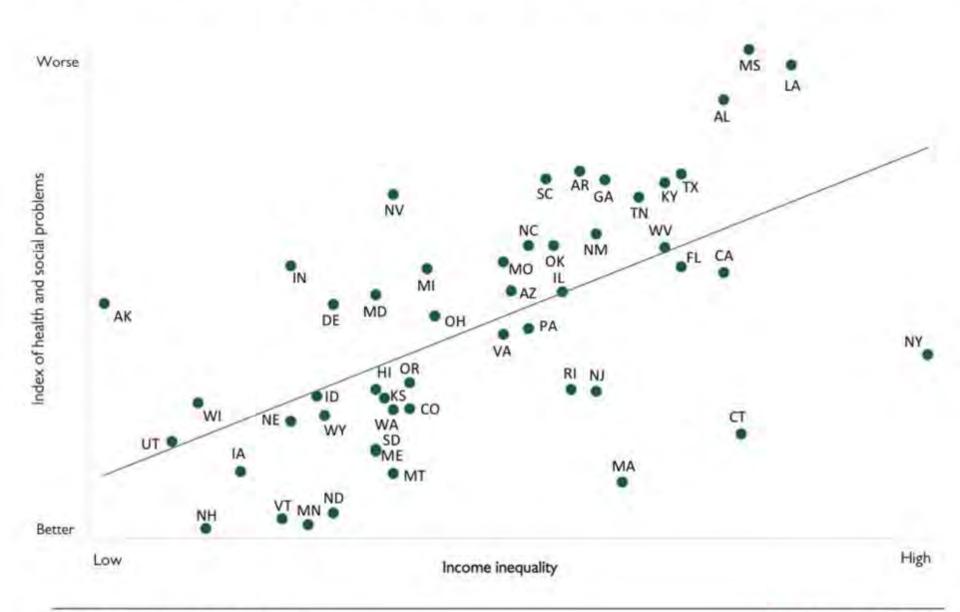
- Less infant mortality, low birth weight, premature death; longer life expectancy
- Non-significant for maternal mortality

This remained true even when the US was excluded from the analysis

### Life expectancy is longer in more equal rich countries



### Health and social problems are worse in more unequal US states



# Life Expectancy of White Americans

## **US Whites**

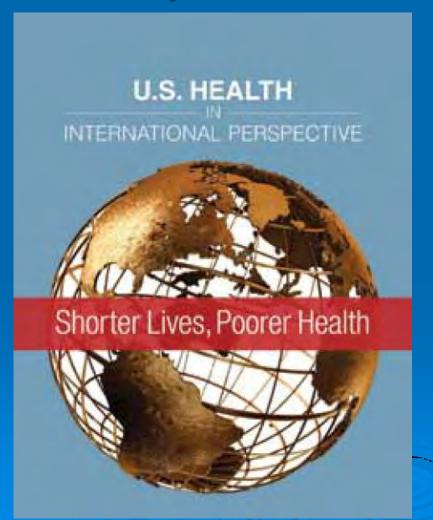
	Life Expectancy		
US White	79 years*		
Qatar	79 years		
Costa Rica	79 years		
Nauru	79 years		

## **US Whites Living Shorter Lives Than:**

- <u>80 years</u>: Belgium, Chile, Denmark, Lebanon, Slovenia
- 81 years: Austria, Finland, Germany, Greece, Ireland, Malta, Netherlands, Portugal, UK
- 82 years: Canada, Cyprus, France, Iceland, Israel, S. Korea, Luxembourg, Monaco, New Zealand, Norway, Sweden
- 83 years: Andorra, Australia, Italy, San Marino, Singapore, Spain, Switzerland
- > <u>84 years</u>: Japan
- > 33 countries (only 17 in 1990)

## "Shorter Lives, Poorer Health"

-January 2013 IOM Report on US Health Compared to 17 peer countries



## "Shorter Lives, Poorer Health"

-January 2013 IOM Report on US Health Compared to 17 peer countries

" The panel was struck by the gravity of its findings. For many years, Americans have been dying at younger ages than people in almost all other high-income countries. This disadvantage has been getting worse for three decades, especially among women.

## "Shorter Lives, Poorer Health"

-January 2013 IOM Report on US Health Compared to 17 peer countries

"The US health disadvantage cannot be fully explained by the health disparities that exist among people who are uninsured or poor, as important as these issues are. Several studies are now suggesting that even advantaged Americans-those who are white, insured, college-educated, or upper income are in worse health than similar individuals in other countries."

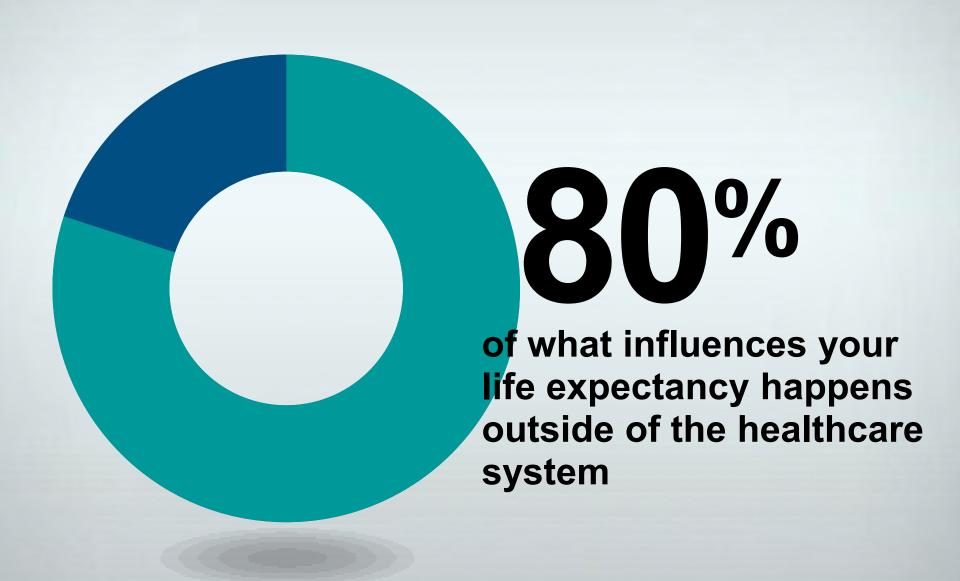


# The Neighborhood Context



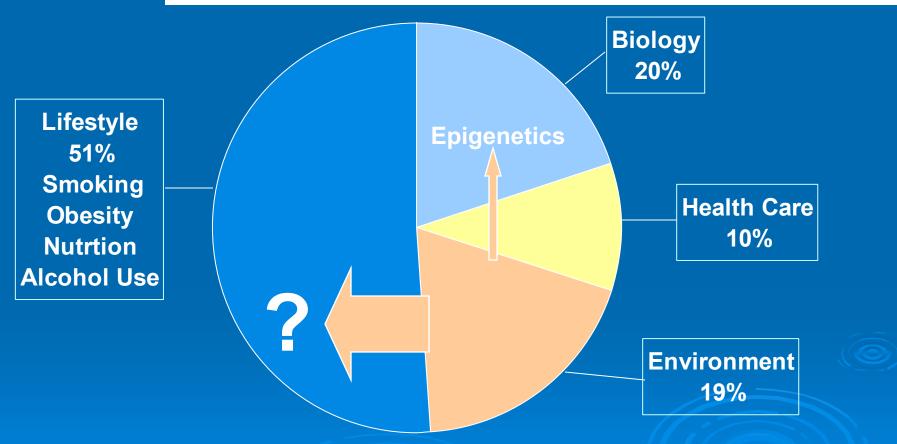






### **Actual Causes of Death**

A bridge between genotype and phenotype— a phenomenon that changes the final outcome of a locus or chromosome without changing the underlying DNA sequence



Source: McGinnis, J.M and Foege, W.H. (1993). "Actual Causes of Death in the United States,"

Journal of the American Medical Association.

Allostasis, meaning literally "maintaining stability (or homeostasis) through change" was introduced by Sterling and Eyer to describe how the cardiovascular system adjusts to resting and active states of the body. This notion can be applied to other physiological mediators, such as the secretion of cortisol as well as catecholamines.

The concept of "allostatic load" was proposed to refer to the wear and tear that the body experiences due to repeated cycles of allostasis as well as the inefficient turning-on or shutting off of these responses.

-Bruce McEwen and Teresa Seeman in collaboration with the Allostatic Load Working Group.

### The stress effect

Middle-class people aren't living as long as wealthier people in the same area. One explanation is chronic stress — those experiencing more financial hardships and dealing with more everyday worries aren't as healthy as wealthier people. Over time, chronic stress can lead to a condition called allostatic load, which becomes even more pronounced in people lower on the socioeconomic ladder.

### Stress and cortisol

In response to stress or perceived danger. harmones produced by the adrenal glands (including cortisal and adrenalin) work together when the body must react quickly to sudden threatening situations.



#### The brain and the body react to stress.

### Cortisol and craving

The hormone: cortisol is secreted from the adrenal gland and helps regulate glucose. which the body uses for energy. But chronic: stress creates a constant state of alarm. making the body crave sugar and carbohydrates.





Long-term

effects of high

allostatic load

■ Elevated levels

of cortisol can

create a feeling of hunger, leading

to overeating

and obesity.

# High blood

#### Lowered immune system resistance: can ead to inflammation and increased odds of developing many diseases.

### Defending against allostatic load

Regular exercise Physical exertion can have a powerful effect in diminishing the cascade

of stress hormones. allostatic load can have on

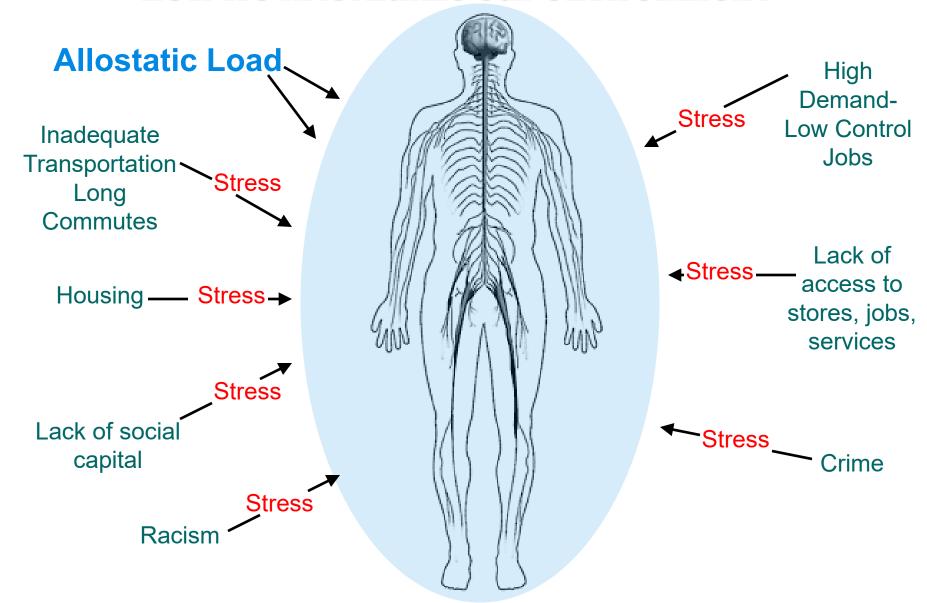
Lack of sleep exacerbates the detrimental effects

A good night's sleep

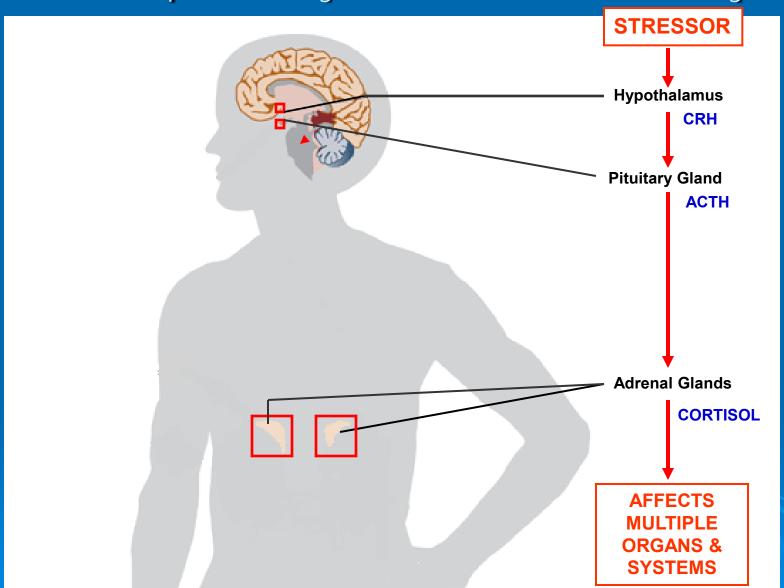
Source, Nancy Adm. MacAnthus Navyore on Sonious vicinic Status and Health

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## When the external becomes internal: How we internalize our environment



## Stress pathway from brain to body



## Stressed vs. Stressed Out

### Stressed

- Increased cardiac output
- Increased available glucose
- Enhanced immune functions
- Growth of neurons in hippocampus & prefrontal cortex

### Stressed Out

- Hypertension & cardiovascular diseases
- Glucose intolerance & insulin resistance
- Infection & inflammation
- Atrophy & death of neurons in hippocampus & prefrontal cortex

## **Telomeres**



## **Telomeres**

- Changes in diet, exercise, stress management and social support may result in longer telomeres.
- Telomere length reduced by poverty, education, safety stress, negative social interactions, low neighborhood satisfaction, hopelessness, and obesity.

## **Loss of Control**

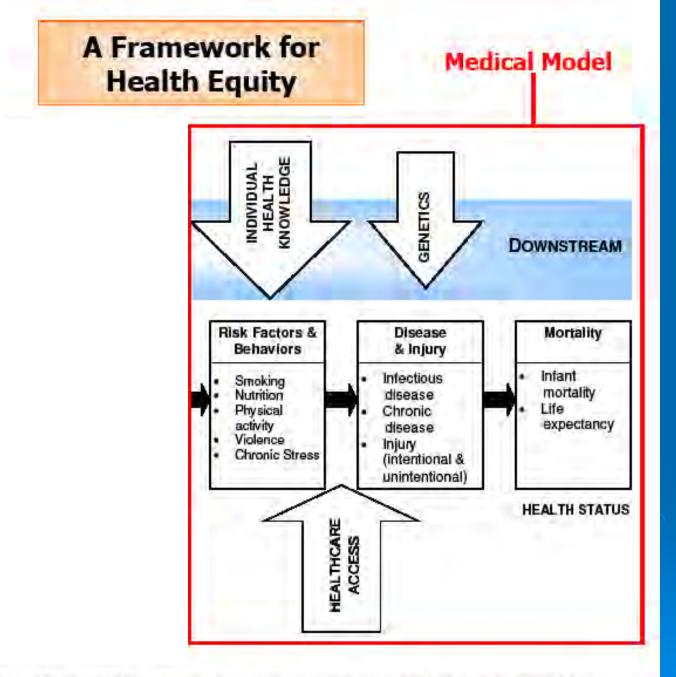


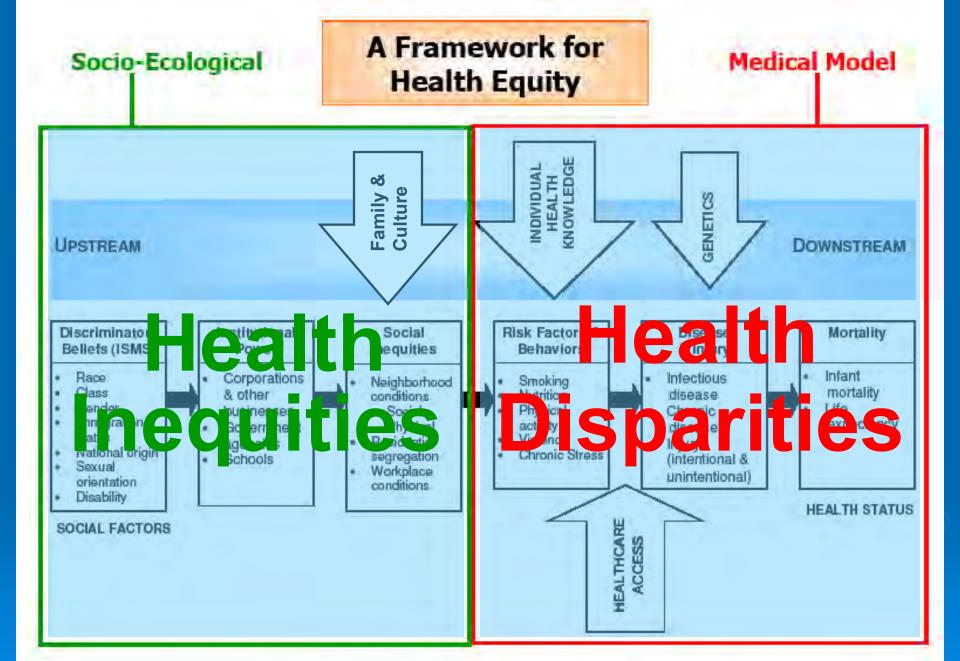
## Disparities are the tip of the iceberg...

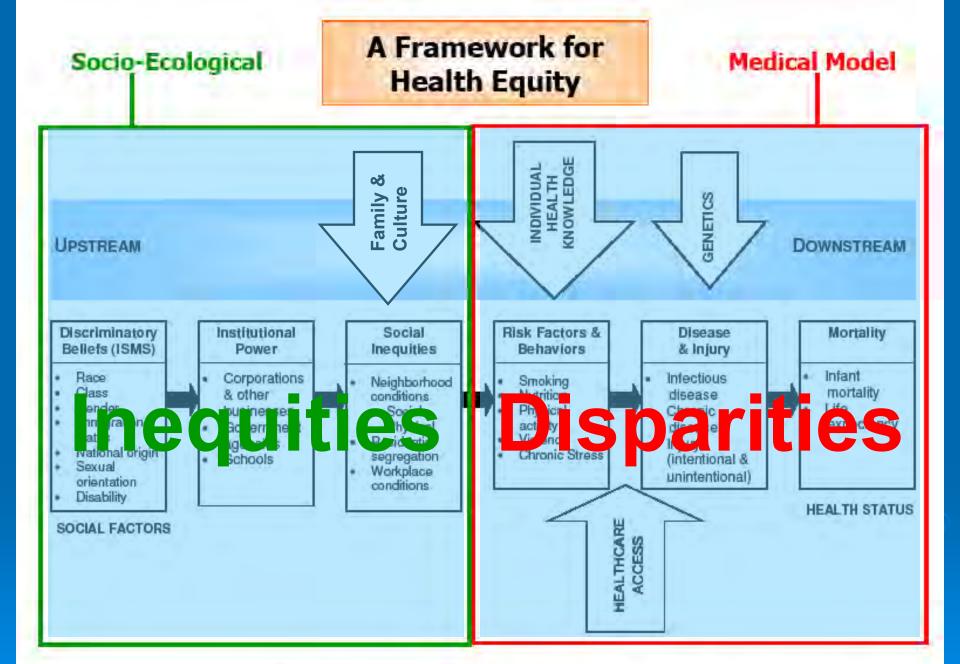


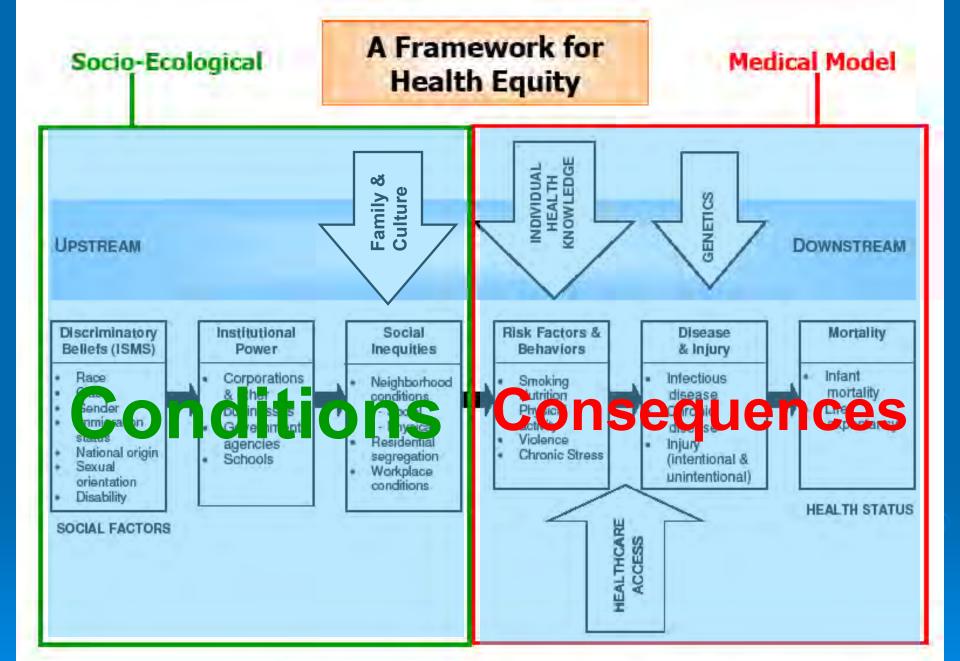


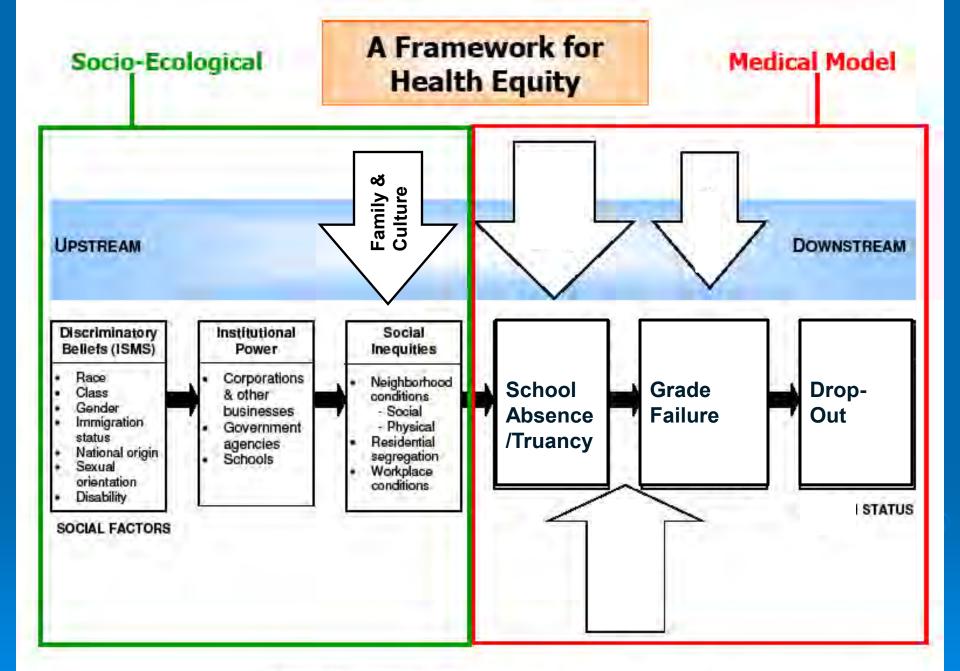
# A Practitioner's Framework

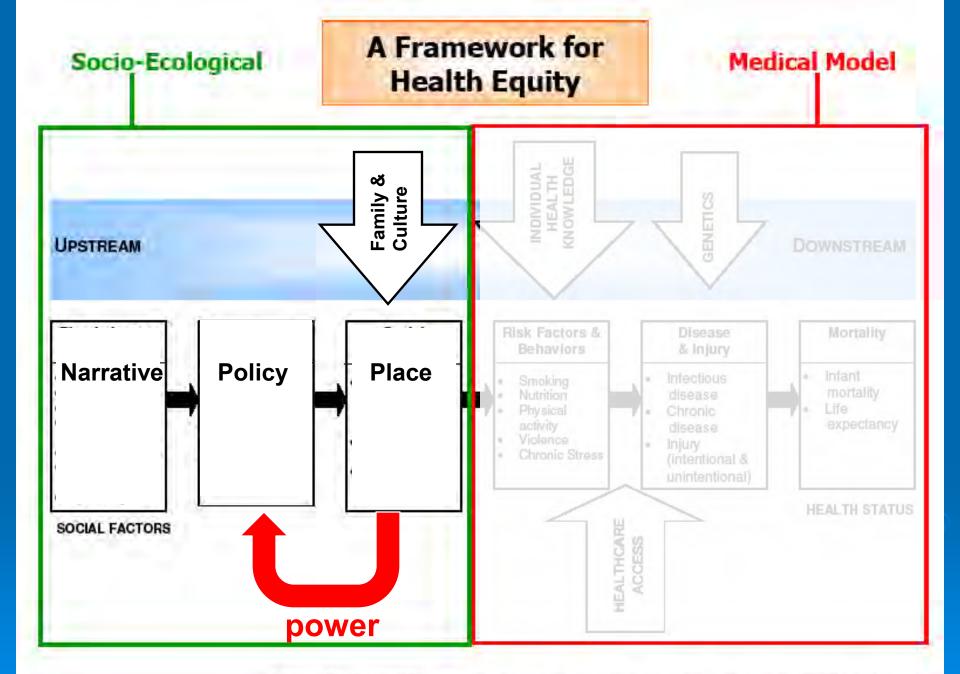


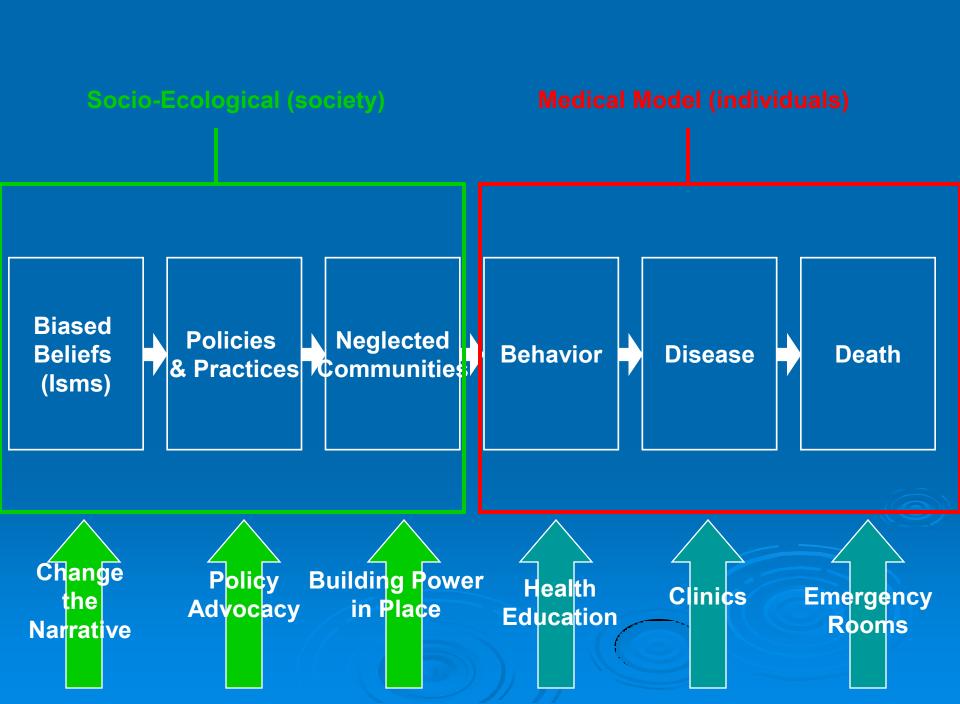












# Building Healthy Communities

An Ecological Approach to Improving Population Health



Building Healthy Communities \_\_\_\_\_\_







### Our Community Partners





### Human Capital: Our Greatest Resource





## The "What"

The Core Content of Our Work

# **BHC Planning Process**

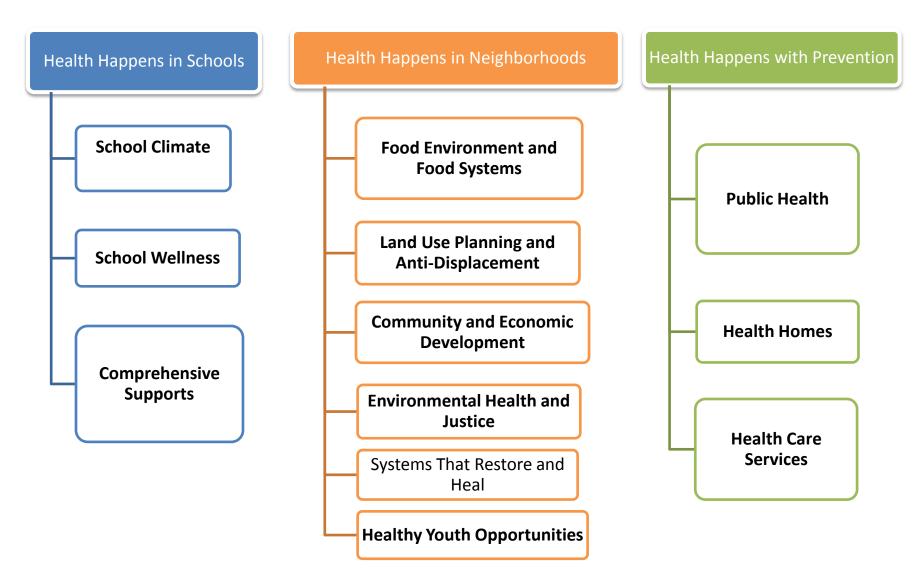












## The "How"

Our Approach in Broad Strokes

### 4 Systems/Institutional Targets

Health systems are family-centered and prioritize prevention opportunities for children, young adults, and families

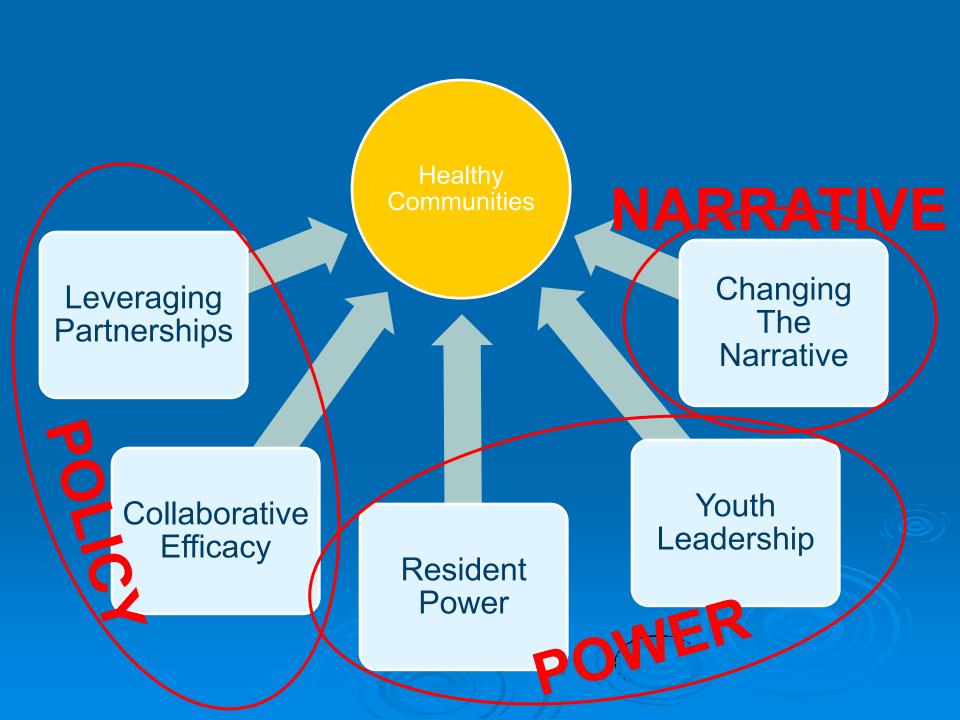
Human services
systems are family centered,
prioritize prevention, and
promote healthy opportunities for
children, young adults, and
families



**Schools** promote healthy behaviors and are a gateway for resources and services for families

Physical, social, & economic environments in local communities support health





"Physicians are the natural attorneys of the poor, and social problems fall to a large extent within their jurisdiction"-Rudolph Virchow 1821-1902



## **Contact Information**

Tony Iton, MD, JD, MPH Senior Vice President The California Endowment

Aiton@calendow.org (510) 271-4310









# Building Healthy Communities

#### Drivers of Change

People Power Youth
Leadership,
Development
and Organizing

Enhanced
Collaboration
& Policy
Innovation

Leveraging Partnerships & Resources Changing the Narrative





#### People Power

GOALS: Resident organizing and training activities support resident engagement and leadership in local decision-making forums and policy and systems change campaigns. Local systems and institutions promote full and active participation by residents in policy development and implementation.

Residents value and have the tools to engage in multi-racial alliances for change.





#### People Power

As part of the *People Power* vision, we aim to help BHC communities develop the following capacities by 2020:

- Adult residents from traditionally marginalized communities occupy positions of influence and authority in their communities, across public, community-based and private institutions.
- Traditionally marginalized and excluded residents have voice and power in local government agencies and nonprofit decision-making processes.
- Pathways and structures are in place within organizations and community-wide to support resident healing, leadership development and organizing, with residents leading organizing efforts for local, regional and statewide impact.
- Local structures—formal and informal—are in place to support mobilizing resident voice and power.
- Multi-racial and inclusionary alliances build people power and deepen impact.





#### Youth Leadership, Development and Organizing

GOALS: Youth leadership training and a continuum of other youth development activities support a network of motivated, activated youth leaders in reaching their full potential, serving as leaders in the movement to create healthy and just communities. Youth are organizing within and across all Building Health Community (BHC) sites and beyond. BHC supports leadership development as well as youth academic, economic, and socio-emotional development, employing a trauma- and healing-informed approach. Additionally, BHC supports pushes for norms change within public and private institutions to promote active participation by youth in decision making at the local, regional and statewide levels.





#### Youth Leadership, Development and Organizing

As part of the **Youth Leadership** vision, we aim to help BHC communities develop the following capacities by 2020:

- Local youth increasingly occupy positions of influence in their communities.
- Pathways and structures to support local youth healing, leadership development and organizing are in place.
- Youth voice and leadership are incorporated in decision making by public agencies and community based organizations.
- Public and private institutions prioritize and increase funding to promote healthy youth development, resiliency, and power.





#### **Enhanced Collaboration & Policy Innovation**

GOALS: Improve the way key systems collaborate by enhancing the quality and quantity of interactions between systems players, community-based organizations, and residents to promote constructive and innovative system redesign and performance optimization. Enhance the quality of crosssector collaboration, resident/stakeholder engagement, and data-sharing/analysis. Tools and mechanisms are made available to facilitate root cause analysis, stakeholder engagement, collaboration (such as the Hub, the convening and coordinating table for all BHC stakeholders), data sharing, and improved local policy analysis and development.





#### Enhanced Collaboration & Policy Innovation

As part of the *Collaboration and Policy* vision, we aim to help BHC communities develop the following capacities by 2020:

- Local government agencies, community based organizations, residents and other stakeholders work collaboratively across issue areas to establish and pursue shared outcomes and power.
- Local structures and practices grounded in the meaningful participation of marginalized populations are in place to promote and sustain ongoing, inclusive and collective efforts to advance health equity.
- Coalitions, collaborations, and other structures that promote working across issues and sectors
  are in place to support innovative advocacy approaches to advance policy, systems and social
  norms change.
- Local policies, practices and structures promote equity and inclusion of historically marginalized populations.
- Community stakeholders, including nonprofit organizations, systems leaders, and policy makers integrate an equity lens in policy development and practice.





#### Leveraging Partnerships and Resources

GOAL: Strategic partnerships among the many sectors connected to BHC priorities leverage new dollars or other discrete resources so that transformative community strategies thrive and are sustained.







#### Leveraging Partnerships and Resources

As part of the *Partnerships and Resources* vision, we aim to help BHC communities develop the following capacities by 2020:

- Community stakeholders in divested neighborhoods mobilize and secure new forms of private capital by building community development skills and fostering new relationships.
- Community stakeholders mobilize and secure increased investment of public dollars across sectors (e.g. public health, education, human services, transportation, public works, public safety, public housing, etc.) to address the social determinants of health, such as housing, jobs, food, transportation, and all the opportunities, resources, and services people and communities need to be healthy in disinvested neighborhoods.
- Local residents are directly engaged in the implementation and governance of partnership agreements, such as community benefit agreements, both to reinforce their power and to maximize the potential for sustainability.





#### Changing the Narrative

GOAL: Engage the local media and local messengers influential with elected officials and other leaders in weaving a compelling and new narrative about community health and prevention, and the historical and structural context for low income communities.





#### Changing the Narrative

As part of the *Changing the Narrative* vision, we aim to help BHC communities develop the following capacities by 2020:

- People value health equity and inclusion. They understand that the social and physical environment influence health and contextualize current inequities and community problems within a historical and structural context.
- The dominant narrative recognizes historically marginalized communities (Boys and Men of Color, Undocumented, LGBTQ, Women, Formerly Incarcerated) as valuable members of the community and they are supported by policies, practices and structures that ensure their inclusion.
- Local structures—formal and informal—are in place to facilitate adult and youth residents to tell their own stories.

