Climate Change and Health Equity: Existing Disease Burden

Neil Maizlish, PhD
Office of Health Equity
California Department of Public Health

Public Health Work Group
Sacramento, February 24, 2015
Climate Change and Health Equity

- What is the existing burden of disease?
- What are the existing inequities in health outcomes?
- What is producing population vulnerabilities and inequities in the health outcomes?
- How will climate change impact health outcomes and the factors producing health inequities?

“Climate change will, absent other changes, amplify some of the existing health threats the nation now faces. Certain people and communities are especially vulnerable, including children, the elderly, the sick, the poor, and some communities of color.” – 3rd National Assessment of Climate Change, 2014
Burden of Disease and Injuries: Leading Causes of Death, California

Source: California Department of Public Health, Vital Records, 2012
Disparities in the Disease Burden: Deaths by Race/Ethnicity, California, 2002-2007

Source: California Department of Public Health; Department of Finance
Disparities in the Disease Burden: Share of Adults with One or More Chronic Conditions, by County and Service Planning Areas of Los Angeles County, 2007

Disparities in Disease Burden: Social Determinants Influence the Share of the California Adults Who Were Ever Told by a Doctor They Have Heart Disease, 2007

Education:
- Grade School
- High School & Voc.
- College Graduate

Poverty Level:
- 0-199%
- 200-299%
- 300% or more

Race/Ethnicity:
- Native Am.
- Hawaiian/PI
- 2 or More Races
- African Am.
- White
- Latino
- Asian

Source: California Health Interview Survey (CHIS), 2007
Traditional Public Model of Burden of Disease and Injury

- 3-4-50
  - 3 behavioral risk factors (tobacco, poor diet, physical inactivity) associated with
  - 4 major diseases (heart, cancer, stroke, diabetes) that account for
  - 50% of deaths

Deaths by Attributable Cause, United States
A PUBLIC HEALTH FRAMEWORK FOR REDUCING HEALTH INEQUITIES
BAY AREA REGIONAL HEALTH INEQUITIES INITIATIVE

UPSTREAM

SOCIAL INEQUITIES
Class
Race/ethnicity
Immigration status
Gender
Sexual orientation

INSTITUTIONAL POWER
Corporations & businesses
Government agencies
Schools
Laws & regulations
Not-for-profit organizations

LIVING CONDITIONS
Physical environment
Land use
Transportation
Housing
Residential segregation
Exposure to toxins
Social environment
Experience of class, racism, gender, immigration
Culture, incl. media
Violence
Economic & Work Environment
Employment
Income
Retail businesses
Occupational hazards
Service environment
Health care
Education
Social services

RISK BEHAVIORS
Risk behaviors
Smoking
Poor nutrition
Low physical activity
Violence
Alcohol & other Drugs
Sexual behavior

DISEASE & INJURY
Communicable disease
Chronic disease
Injury (intentional & unintentional)

MORTALITY
Infant mortality
Life expectancy

DOWNSTREAM

Strategic partnerships
Advocacy

Community capacity building
Community organizing
Civic engagement

Emerging Public Health Practice
Current Public Health Practice

POLICY

Individual health education
Case management
Health care
Some populations have a disproportionate share of risk factors and social determinants that adversely affect health

Source: California Health Interview Survey (CHIS), 2007
Tree Canopy Coverage* by Race/Ethnicity, California, 2011

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Percent of Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Am.</td>
<td>11.5</td>
</tr>
<tr>
<td>White</td>
<td>10.6</td>
</tr>
<tr>
<td>Multiple</td>
<td>8.7</td>
</tr>
<tr>
<td>Other</td>
<td>7.6</td>
</tr>
<tr>
<td>NHAPI</td>
<td>6.8</td>
</tr>
<tr>
<td>Asian</td>
<td>6.7</td>
</tr>
<tr>
<td>AfricanAm</td>
<td>5.7</td>
</tr>
<tr>
<td>Latino</td>
<td>5.2</td>
</tr>
<tr>
<td>Total</td>
<td>7.7</td>
</tr>
</tbody>
</table>

Data Source: National Land Cover Database, 2006; U.S. Census
NHAPI, Native Hawaiian and Other Pacific Islander
census block area weighted by population and aggregated to state total
Prevalence of Household Air Conditioning by Race/Ethnicity, California, 2009

Data Source: National Land Cover Database, 2006; U.S. Census
NHOPI, Native Hawaiian and Other Pacific Islander
- Census block area weighted by population and aggregated to state total
Cumulative Impact

Health/Burden of Disease = Socio-economic Factors 40% + Individual Behaviors 30% + Clinical Care, 20% + Physical & Built Environ. 10%

Source: Robert Wood Johnson/University of Wisconsin, Commission for a Healthier America, County Health Rankings, 2012
Cumulative Impact of Social Determinants of Health Over the Life Cycle and Generations

A White child from the Oakland Hills can expect to live to 85 years old, whereas an African-American child living in West Oakland—just a few miles away—can expect to live only to 70.

The child from West Oakland is:
- 1.5 times more likely to be born prematurely
- 7 times more likely to be born into poverty
- 2 times as likely to live in a home that is rented
- 4 times more likely to have parents with only a high-school education
- 2.5 times more likely to be behind in childhood vaccinations
- 4 times less likely to read at grade level by fourth grade
- 4 times as likely to live in a neighborhood with double the density of liquor stores and fast food outlets
- 5.6 times more likely to drop out of school

As an adult, he or she is:
- 5 times more likely to be hospitalized for diabetes
- 2 times more likely to be hospitalized for heart disease
- 2 times more likely to die of heart disease
- 3 times more likely to die of stroke
- 2 times as likely to die of cancer

Sources: Alameda County Public Health Department, 2008, 2012
How Does Climate Change Interact with Health Inequities and Factors that Produce Them?

- Poorer health is more prevalent in socially vulnerable populations
- Some vulnerable/disadvantaged live in higher climate risk areas (e.g., poor disproportional residing in urban heat islands)
- Some vulnerable populations have lower adaptive capacity
- Inequities in co-benefits or harms of climate mitigation or adaptation strategies, or inaction
Contact Information

Neil Maizlish (Neil.Maizlish@cdph.ca.gov)

Office of Health Equity