Determinants of Health and Policy Approaches to Improve Population Health

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Public Health in the 21st Century

• Epidemic of overweight: diabetes, heart disease

  – Diabetes affects 25.8 million people = 8.3% of U.S. Population

  – 26.9% of U.S. residents over 65 years had diabetes in 2010

  – More than 1 in 3 (81 million) U.S. adults currently live with cardiovascular disease

1) National Diabetes Fact Sheet, 2011, CDC; 2) Heart Disease and Stroke Prevention, Addressing the Nation’s Leading Killers: At a Glance 2010, CDC
Public Health in the 21st Century

- Impacts of population density/growth
  - Infectious diseases
  - Mental health problems
  - Environmental exposures
    - E.g. air pollution, toxic exposures

- Macro-environment: climate, conflict

- Emergency preparedness
Public Health in the 21st Century

• Increased burden and costs of care for aging populations

  – In 2009, over 55 million U.S. residents were age 60 or older = 18% of the population

  – Projected to grow to 92.2 million in 2030 and 112 million by 2050
Public Health in the 21st Century

• Increasing Disparities
  – Strongly associated with social environment (education, job opportunities, etc)
  – In Los Angeles County, life expectancy for an African American male at birth (69.4 yrs) is nearly 18 years shorter than that of an Asian/Pacific Islander female (86.9yrs)
Changing Causes of Death: Crude Death Rate for Infectious Diseases, U.S., 1900 - 2000

* Rate is per 100,000
# Leading Causes of Death & Premature Death, Los Angeles County, 2009

## Leading Causes of Death

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause of Death</th>
<th>No. of Deaths</th>
<th>Premature Death Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Coronary heart disease</td>
<td>12,725</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>Stroke</td>
<td>3,301</td>
<td>8.</td>
</tr>
<tr>
<td>7.</td>
<td>Diabetes</td>
<td>1,964</td>
<td>9.</td>
</tr>
<tr>
<td>8.</td>
<td>Colorectal cancer</td>
<td>1,388</td>
<td>11.</td>
</tr>
</tbody>
</table>

## Leading Causes of Premature** Death

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause of Death</th>
<th>Years of Life Lost</th>
<th>Death Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Suicide</td>
<td>20,835</td>
<td>14.</td>
</tr>
<tr>
<td>6.</td>
<td>Drug overdose</td>
<td>20,484</td>
<td>18.</td>
</tr>
<tr>
<td>7.</td>
<td>Lung cancer</td>
<td>17,295</td>
<td>3.</td>
</tr>
</tbody>
</table>

Mortality in Los Angeles County: Los Angeles County Department of Public Health, Office of Health Assessment & Epidemiology
57,602 total deaths and 455,513 years of life lost, excluding infants less than 1 year of age and persons of unknown age. **Death before age 75 years.

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>2000</th>
<th>2009</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary heart disease</td>
<td>220</td>
<td>129</td>
<td>-42%</td>
</tr>
<tr>
<td>Stroke</td>
<td>57</td>
<td>34</td>
<td>-41%</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>41</td>
<td>31</td>
<td>-23%</td>
</tr>
<tr>
<td>COPD</td>
<td>35</td>
<td>30</td>
<td>-13%</td>
</tr>
<tr>
<td>Alzheimer’s disease</td>
<td>11</td>
<td>21</td>
<td>94%</td>
</tr>
<tr>
<td>Pneumonia/influenza</td>
<td>32</td>
<td>21</td>
<td>-34%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>24</td>
<td>20</td>
<td>-17%</td>
</tr>
<tr>
<td>Colorectal cancer</td>
<td>18</td>
<td>14</td>
<td>-19%</td>
</tr>
<tr>
<td>Liver disease</td>
<td>14</td>
<td>11</td>
<td>-10%</td>
</tr>
<tr>
<td>Breast cancer (females)</td>
<td>24</td>
<td>21</td>
<td>-9%</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>6</td>
<td>3</td>
<td>-50%</td>
</tr>
<tr>
<td>Homicide</td>
<td>10</td>
<td>7</td>
<td>-33%</td>
</tr>
</tbody>
</table>

Rate (per 100,000)
Age-adjusted to year 2000 U.S. standard population
## Comparison of the Leading Causes of Premature Death by Race/Ethnicity, Los Angeles County 2009

<table>
<thead>
<tr>
<th>Race/ethnicity</th>
<th>#1 cause</th>
<th>#2 cause</th>
<th>#3 cause</th>
<th>#4 cause</th>
<th>#5 cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Coronary heart disease</td>
<td>Drug Overdose</td>
<td>Suicide</td>
<td>Lung cancer</td>
<td>Liver disease</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Homicide</td>
<td>Coronary heart disease</td>
<td>Motor Vehicle Crash</td>
<td>Liver disease</td>
<td>Drug Overdose</td>
</tr>
<tr>
<td>Black</td>
<td>Coronary heart disease</td>
<td>Homicide</td>
<td>Diabetes</td>
<td>Lung cancer</td>
<td>HIV</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>Coronary heart disease</td>
<td>Lung cancer</td>
<td>Suicide</td>
<td>Stroke</td>
<td>Colorectal cancer</td>
</tr>
<tr>
<td>Los Angeles County Total</td>
<td>Coronary heart disease</td>
<td>Homicide</td>
<td>Motor Vehicle Crash</td>
<td>Liver disease</td>
<td>Suicide</td>
</tr>
</tbody>
</table>
Homicide Rate by Age Group, Los Angeles County, 1997-2006

Source: Linked DSMF for Los Angeles County residents, 1997-2006
What produces health?

• Genetics

• Behaviors
  – Health related
  – Risk taking
  – Health care seeking
  – Complying with medical advice

• Health care system

• Environment
  – Physical
  – Social
  – Economic
One Model of Population Health

Health Outcomes:
- Mortality (length of life): 50%
- Morbidity (quality of life): 50%

Health Factors:
- Health behaviors (30%)
  - Tobacco use
  - Diet & exercise
  - Alcohol use
  - Unsafe sex
- Clinical care (20%)
  - Access to care
  - Quality of care
- Social and economic factors (40%)
  - Education
  - Employment
  - Income
  - Family & social support
  - Community safety
- Physical environment (10%)
  - Environmental quality
  - Built environment

Health Behaviors 30%
Medical 20%
Underlying Determinants of Health 50%
Common Health Improvement Approaches

• Shaping health behaviors
  – Individual
  – Group

• Medical care
  – Preventive services
  – Access for underserved
Modern Public Health

• Adapting more ecologic models of health

• Recognizing that environments in which we live, work, play and age strongly influence health outcomes
Ecologic Model of Health

Interventions
- Policies
- Programs
- Information

Outcomes
- Behavioral outcomes
- Specific risk factors, diseases & conditions
- Injuries
- Well-being & health-related Quality of Life
- Health equity

Assessment, Monitoring, Evaluation & Dissemination
Leading Causes of Disability-Adjusted Life Years (DALYs) in Los Angeles County, 2005

- Coronary Heart Disease: 79,281 DALYs
- Alcohol Dependence: 65,198 DALYs
- Diabetes Mellitus: 53,364 DALYs
- Alzheimer's/Other Dementia: 52,463 DALYs
- Depression: 47,698 DALYs
- Homicide/Other Violence: 40,069 DALYs
- Osteoarthritis: 39,931 DALYs
- Motor Vehicle Crash Injuries: 30,691 DALYs
- Stroke: 30,642 DALYs
- Emphysema: 28,766 DALYs
Alcohol’s Costly Toll

• Alcohol-related illness accounted for 1,370 deaths and over 27,000 hospitalizations

• Alcohol is implicated in DUIs, falls, suicide, poisonings, & occupational injuries
  \( \approx 700 \text{ deaths and } 27,530 \text{ injuries per year} \)

• Annual economic cost of alcohol use in LAC
  
  $5.4 \text{ billion in illness}$
  
  $2.0 \text{ billion in traffic and DUI}$
  
  $1.0 \text{ billion in other injury}$
  
  + $2.4 \text{ billion in crime}$

  $10.8 \text{ billion dollars}$
Alcohol’s Costly Toll (cont.)

- Communities with high density alcohol outlets are:
  - 9 to 10x more likely to have increased rates of violent crime\textsuperscript{i,ii}
  - 3x more likely to have increased rates of alcohol-involved crashes\textsuperscript{i}
  - 5x more likely to have increased rates of alcohol-related deaths\textsuperscript{ii}

Off-Premises Alcohol Outlet Density among LA County Cities and Communities, 2009

\textsuperscript{i} – on-premise outlets (alcohol consumed on site); \textsuperscript{ii} – off-premise outlets (alcohol consumed off site)
Percent of adults who reported binge drinking in the past month, by gender, in LA County, 2007

Binge drinking for males is drinking 5 or more drinks on one occasion at least one time in the past month. Binge drinking for females is drinking 4 or more drinks on one occasion at least one time in the past month.
The Guide to Community Preventive Services ("The Community Guide")

- Congressionally mandated expanding resource for recommendations on evidence-based interventions to improve public health

- Directed by the 15 member independent volunteer Task Force on Community Preventive Services

- Liaisons with key organizations support the science and dissemination
Community Guide (cont.)

• Systematic reviews of available evidence lead to recommendations based on standardized methods
  – Effectiveness of population- and health system-based interventions
• Recommendations for policy and practice (programs and services)
• Identification of research gaps
The CG Seeks to Answer Key Questions about Interventions

- Do they work?
- How well?
- For whom?
- Under what circumstances are they appropriate?
- What do they cost?
- Do they provide value?
- What are the barriers to their use?
- Are there any harms?
- Are there any unanticipated outcomes?
Community Guide Topics

- Adolescent Health
- Alcohol
- Asthma
- Birth Defects
- Cancer
- Cardiovascular Disease
- Diabetes
- Health Communication
- Health Equity
- HIV/AIDS, STIs, & Pregnancy
- Mental Health
- Motor Vehicle
- Nutrition
- Obesity
- Oral Health
- Physical Activity
- Social Environment
- Tobacco Use
- Vaccines
- Violence
- Worksite
### Preventing Excessive Alcohol Consumption

#### Interventions directed to the general population

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dram shop liability</td>
<td>Recommended</td>
</tr>
<tr>
<td>Increasing alcohol taxes</td>
<td>Recommended</td>
</tr>
<tr>
<td>Maintaining limits on days of sale</td>
<td>Recommended</td>
</tr>
<tr>
<td>Maintaining limits on hours of sale</td>
<td>Recommended</td>
</tr>
<tr>
<td>Overservice law enforcement initiatives</td>
<td>Insufficient Evidence</td>
</tr>
<tr>
<td>Privatization of retail alcohol sales</td>
<td>Recommended Against</td>
</tr>
<tr>
<td>Regulation of alcohol outlet density</td>
<td>Recommended</td>
</tr>
<tr>
<td>Responsible beverage service training</td>
<td>Insufficient Evidence</td>
</tr>
</tbody>
</table>

#### Interventions directed to underage drinkers

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced enforcement of laws prohibiting sales to minors</td>
<td>Recommended</td>
</tr>
</tbody>
</table>
Tobacco’s Costly Toll

- Tobacco use is single most preventable cause of death, with 10 million annual deaths estimated by the 2030.
- 50,000 annual deaths in the US due to secondhand smoke exposure alone.
  - In LAC, an estimated 336,000 children are exposed to secondhand smoke at home
- A million+ smokers in LAC.
- Prevalence is at 14.3%; cities range from 5.3% - 21.9%
- 1 out of every 7 deaths in LAC is caused by tobacco use (≈ 9,000 deaths)
Tobacco’s Costly Toll (cont.)

- In LAC, tobacco use is linked to:
  - 15% coronary heart disease deaths
  - 9% stroke deaths
  - 77% lung cancer deaths
  - 15% pneumonia deaths
  - 85% emphysema deaths

- Smoking costs to LAC per year
  - $2.3 billion in direct medical costs
  - $2.0 billion in lost productivity
  - $4.3 billion dollars
Percent of Adults who Smoke Cigarettes by Gender - LA County, 2002-2007

Los Angeles County Health Survey
Project TRUST - Tobacco Control & Prevention Program

- Working to create a climate where tobacco use is less acceptable.
- Goal to reduce smoking prevalence and exposure to secondhand smoke, especially among vulnerable populations.
Select Tobacco Policy Objectives

• Reducing secondhand smoke exposure
  – Smoke-free Multi-unit Housing
  – Outdoor Areas (dining areas, plazas, malls, events, service lines, transit stops, doorways, etc.)

• Reducing demand by raising the minimum price

• Strengthening California’s current Some-Free Workplace law
# Tobacco Control Policies Adopted in LAC, 2004-2011

<table>
<thead>
<tr>
<th>Policy Type</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco Retail License</td>
<td>33</td>
</tr>
<tr>
<td>Smoke-Free Multi-Unit Housing</td>
<td>8</td>
</tr>
<tr>
<td>Smoke-Free Parks</td>
<td>35</td>
</tr>
<tr>
<td>Smoke-Free Outdoor Dining</td>
<td>6</td>
</tr>
<tr>
<td>Smoke-Free Beaches</td>
<td>13</td>
</tr>
<tr>
<td>Comprehensive Smoke-free Outdoor Areas</td>
<td>13</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>115</strong></td>
</tr>
</tbody>
</table>

Coronary Heart Disease Mortality by Race/Ethnicity, LA County, 2001-2009

Age–Adjusted rate per 100,000

- White
- Hispanic
- Black
- Asian/Pacific Islander
Benefits of Physical Activity

- Increased life span and improved function
- Reduced hypertension, heart disease, and stroke
- Prevention of diabetes and related complications
- Decreased risk of colon cancer
- Improved mental health
- Body weight maintenance and obesity control
- Increased bone mass
- Improved immune function
- Reduced health care costs

Surgeon General’s Report, 1996
Self Reported Levels of Physical Activity among Adults in LA County, 2007

- **53%** Active (meets guidelines)
- **11%** Some Activity (does not meet guidelines)
- **36%** Minimal to No Activity (sedentary)
Physical Activity Guidelines for Americans (PAGA) Study

• 2011 study assessed self-reported vs. objectively measured physical activity among U.S. adults (n=4,773) using accelerometer data

Percentage of adults meeting the PAGA:

Self reported: 62%
Objectively measured: 9.6%
Prevalence of Adult Obesity
Los Angeles County, 1997-2007

The county’s adult population gained 51 million lbs from 1997-2007
Prevalence of Obesity Among 5th, 7th, and 9th Graders in Los Angeles County Public Schools, California Physical Fitness Testing, 1999-2009

Source: California Physical Fitness Testing Program, California Department of Education. Includes 5th, 7th, and 9th graders enrolled in LA County public schools.
Obesity Prevalence Among 3 and 4 Year Olds in the WIC Program, Los Angeles County, 2003-2010

Source: PHFE WIC Program, LA County
Diabetes Mortality by Race/Ethnicity, Los Angeles County, 2001-2009

Age – Adjusted rate per 100,000

- White
- Hispanic
- Black
- Asian/Pacific Islander

Los Angeles County Public Health, Office of Health Assessment & Epidemiology
Dangers of Poor Food Environment

- More Americans eating food prepared outside the home, typically higher in fat and calories and lower in nutrients\(^1\)

- % of total energy intake from restaurant and fast food increased by nearly 300% among adolescents from 1977 to 1996\(^2\)

- Portion sizes have increased

- Less access to healthy and affordable food options in lower income neighborhoods\(^3\)

- LA County is estimated to have 4x as many fast food restaurants and convenience stores as supermarkets and produce vendors\(^4\)

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Access to Fresh, Quality Food

• Availability of high quality fresh fruits & vegetables where people shop varies by income:

  • Only 29% of adults living below poverty in Los Angeles reported having access to high quality fresh fruits & vegetables

  • vs 44% of adults living at or above 300% FPL
Does Healthy Food Cost More?

- Healthy foods are no more costly than unhealthy foods, when compared by weight and portion size:
  - Potato chips are nearly twice as expensive as carrots
  - Carrots, onions, pinto beans, mashed potatoes, bananas and orange juice are less expensive per portion than soft drinks, ice cream, chocolate candy, French fries, and sweet rolls

We Now Accept EBT

2 Liters
2 FOR $3.00

Coca-Cola

7 ELEVEN
## Cities/Communities with Lowest and Highest Childhood Obesity Prevalence, 2008

### Top 10*

<table>
<thead>
<tr>
<th>City/Community Name</th>
<th>Obesity Prevalence (%)</th>
<th>Rank of Economic Hardship (1 - 128)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manhattan Beach</td>
<td>3.4</td>
<td>2</td>
</tr>
<tr>
<td>Calabasas</td>
<td>5.0</td>
<td>8</td>
</tr>
<tr>
<td>Hermosa Beach</td>
<td>5.1</td>
<td>1</td>
</tr>
<tr>
<td>Agoura Hills</td>
<td>5.3</td>
<td>10</td>
</tr>
<tr>
<td>Beverly Hills</td>
<td>5.4</td>
<td>19</td>
</tr>
<tr>
<td>Malibu</td>
<td>5.9</td>
<td>4</td>
</tr>
<tr>
<td>Palos Verdes Estates</td>
<td>7.3</td>
<td>5</td>
</tr>
<tr>
<td>San Marino</td>
<td>7.8</td>
<td>15</td>
</tr>
<tr>
<td>Rolling Hills Estate</td>
<td>8.4</td>
<td>9</td>
</tr>
<tr>
<td>La Canada Flintridge</td>
<td>8.5</td>
<td>18</td>
</tr>
<tr>
<td><strong>Average 10 lowest</strong></td>
<td><strong>6.2%</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Ave Median Household Income** $99,555

### Bottom 10*

<table>
<thead>
<tr>
<th>City/Community Name</th>
<th>Obesity Prevalence (%)</th>
<th>Rank of Economic Hardship (1 - 128)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Athens</td>
<td>30.6</td>
<td>94</td>
</tr>
<tr>
<td>South Gate</td>
<td>30.7</td>
<td>110</td>
</tr>
<tr>
<td>Florence-Graham</td>
<td>31.0</td>
<td>128</td>
</tr>
<tr>
<td>West Whittier-Los Nietos</td>
<td>31.1</td>
<td>81</td>
</tr>
<tr>
<td>West Carson</td>
<td>31.4</td>
<td>56</td>
</tr>
<tr>
<td>Vincent</td>
<td>32.2</td>
<td>69</td>
</tr>
<tr>
<td>East Los Angeles</td>
<td>32.9</td>
<td>117</td>
</tr>
<tr>
<td>Hawaiian Gardens</td>
<td>33.4</td>
<td>107</td>
</tr>
<tr>
<td>South El Monte</td>
<td>34.5</td>
<td>111</td>
</tr>
<tr>
<td>Walnut Park</td>
<td>38.7</td>
<td>113</td>
</tr>
<tr>
<td><strong>Average 10 highest</strong></td>
<td><strong>32.7%</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Ave Median Household Income** $37,747

*Table excludes cities/communities where number of students with BMI data < 500.
Source: California Physical Fitness Testing Program, California Department of Education. Includes 5th, 7th, and 9th graders enrolled in LA County public schools; 2000 Census
Economic Hardship & Childhood Obesity
RENEW Los Angeles County
Renew Environments for Nutrition, Exercise, and Wellness

• Seeks to implement policy, systems and environmental changes to improve nutrition, increase physical activity and reduce obesity

• Particularly in disadvantaged communities
Community Market Conversion Pilot

- RENEW partnered with the City of LA Community Redevelopment Agency, California Endowment and Los Angeles Neighborhood Initiative on pilot program to transform 4 corner stores in South Los Angeles

Vision of the pilot:

- Increased access to healthy food
- Improved public health through community education
- Improved food retail environment (physical design of stores to promote healthy options)
- Affordability
- Community driven process
Healthy Food Procurement Policies

- RENEW works with cities and organizations to improve procurement and vending policies
  - Healthy food and beverage policies have been adopted in ten cities
  - All events requiring food and beverages provided at city facilities meet specific nutrition standards, limiting fat, sugar and sodium levels, and restricting sugar sweetened beverages

- RENEW also works on food procurement and food promotion policies for the County of Los Angeles
  - RENEW assists County agencies to improve their food environments
  - Namely, menu labeling, sodium reduction plans, portion size limits on sugar-sweetened beverages and healthy entrees, side options and snacks that meet DPH nutrition standards
DPH Campaign: Rethink Your Drink

• Sugar sweetened beverages (SSB) are the largest single source of added sugar and calories in the American diet.

• On average, nearly 39% of adults in LA County drink at least one SSB per day.

• > 43% of children 17 or younger consume at least one SSB on an average day.
  – A child’s risk for obesity increases an average of 60% with every additional daily serving of soda.
Our Environments Matter
Adverse Health Impacts From Poor Community Design

- traffic safety
- water quality & quantity
- social capital
- elder health & mobility
- mental health
- physical activity
- obesity & chronic disease
- crime & violence
- health disparities
- air pollution
Health and Sprawl

People living in counties marked by sprawling development:

- Walk less in their leisure time
- Are more likely to have high blood pressure
- Have higher body mass indexes
- Are more likely to be overweight (average 6 pound difference)
Land Use Decisions and Public Health

• The public’s health is greatly influenced by the physical environment

• Exposure to traffic emissions has been linked to many adverse health effects\(^1\)

• Many residents live along major transportation corridors, where pollution levels are highest\(^2\)

• Reaching ambient air quality standards will not adequately protect populations living close to local sources of pollution

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PLACE Program
Policies for Livable Active Communities and Environments

• Created to foster policy and environmental change to support safe, healthy and active communities

• Key strategies for infusing PH into land use and community design:
  • **Grants to cities & non-profits** to create safe routes to school plans, bicycle/pedestrian master plans, complete streets etc.
  • **Provide technical assistance** to cities with high rates of childhood obesity for policy change through the “Healthy Policies Initiative”
  • **Influence regional transportation policies** to support PH goals

• City-level policy change to facilitate physical activity
  – Aligned with physical project

• Grantees formed “city-CBO” partnerships

• 5 grantees funded for 3 years
  – New Healthy Eating, Active Living RFP to be issued this spring

• Technical assistance to cities via consultants
  – e.g. active transportation planners and landscape architects
Healthy Policies Initiative

• Providing technical assistance on:
  – Safe Routes to School Plans
    • Huntington Park and South Gate
  – Bike and Pedestrian Master Plans
    • Lynwood and Pomona
  – Provide workshops for city staff and community partners on bike/ped planning, complete streets, bike friendly business districts, etc.
Social Determinants of Health

Interventions
- Policies
- Programs
- Information

Outcomes
- Behavioral outcomes
- Specific risk factors, diseases& conditions
- Injuries
- Well-being & health-related Quality of Life
- Health equity

Assessment, Monitoring, Evaluation & Dissemination
Definition:
Societal Determinants of Health

“Conditions in the social, physical, and economic environment in which people are born, live, work, and age. They consist of policies, programs, and institutions and other aspects of the social structure, including the government and private sectors, as well as community factors.”
Healthy People 2020

• An overarching goal of Healthy People 2020 is to ‘create social and physical environments that promote good health for all.’

• HP 2020 recognizes that social determinants influence population health and limit the ability of many to achieve health equity.

Some Examples of Social Determinants:

- Availability of resources to meet daily needs
  - Eg. safe housing
- Access to educational, economic and job opportunities
- Access to health care services
- Quality of education and job training
- Social support

- Exposure to crime, violence and social disorder
- Social norms and attitudes
  - Eg. discrimination, racism
- Socioeconomic conditions
  - Eg. concentrated poverty
- Language/Literacy
- Availability of jobs that pay living wage
A Closer Look: Social Determinants in LA County
Poverty US, CA, LA County: Under Age 18

% of Population in Poverty

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010

U.S. CA LA County

U.S. Census Bureau, Small Area Income and Poverty Estimates Program, November 2011
Life Expectancy by Median Household Income of Census Tract, Los Angeles County (2005)

<table>
<thead>
<tr>
<th>Median Household Income</th>
<th>Life Expectancy at Birth in Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>$60,000+</td>
<td>82.9</td>
</tr>
<tr>
<td>$45,000-$59,999</td>
<td>80.6</td>
</tr>
<tr>
<td>$35,000-$44,999</td>
<td>79.6</td>
</tr>
<tr>
<td>$25,000-$34,999</td>
<td>79.0</td>
</tr>
<tr>
<td>0-$24,999</td>
<td>77.5</td>
</tr>
</tbody>
</table>

Note: Median income of LA County census tracts are for the year 1999 and are obtained from: Census 2000 Summary File 3 - United States prepared by the U.S. Census Bureau, 2002.
Family Economic Self-Sufficiency Standard

- How much income is needed for a family to adequately meet its minimal basic needs without public or private assistance?

- Self-sufficiency standard is based on the costs families face on a daily basis
  - Housing, food, child care, out-of-pocket medical expenses, transportation, and other necessary spending.

*Note: The Self-Sufficiency Standard includes the net effect of the addition of the child care and child tax credits and the subtraction of taxes.*
Percent of Persons Living Below the Federal Poverty Level, by Race/Ethnicity, LAC

<100% FPL = Percent of persons less than 100% of Federal Poverty Level
*<200%FPL not available by race/ethnicity

U.S. Census Bureau, 2005-2009. 5-Year American Community Survey, Table C17002
Potential Solutions to Keep People Out of Poverty

- Educational programs
- Vocational training
- Job training
- Child care supports
- Literacy programs
- English as Second Language (ESL)
- Earned Income Tax Credit
- Housing subsidies
- Supplemental food assistance programs (CalFresh, WIC, school nutrition)
Recent Example: AB 6 (Fuentes) Removing Fingerprint Imaging

• Signed by Gov. Brown in October 2011
• Into effect on January 1, 2012
• Amended Welfare and Institutions Code Section 10830 by repealing the requirement that CalFresh applicants be fingerprinted and photo imaged as a condition of benefit issuance.
Improved Educational Outcomes

Improved Health Outcomes
Education Matters: More Formal Education = Longer Life Expectancy

Life expectancy at age 25

Men

Women

Years of School Completed

- 0-11 yrs
- 12 years
- 13-15 years
- 16 or more years

And It Matters to the Next Generation: Mother’s Education Related to Infant Mortality

Education’s Influence on Health

- Educational attainment
  - Health knowledge
  - Literacy
  - Coping & problem-solving

- Diet
- Exercise
- Smoking
- Health & disease management

- Exposure to hazards
- Control / demand imbalance
- Stress

- Health insurance
- Sick leave
- Retirement benefits
- Wellness programs
- Stress

- Housing
- Neighborhood environment
- Diet & exercise options
- Stress

- Control beliefs
  - Sense / locus of control, powerlessness, fatalism, mastery, self-efficacy

- Work-related factors
  - Health-related behaviors
  - Coping & problem-solving
  - Response to stressors

- Social & economic resources
- Perceived status
- Stress

- Social networks
  - Social & economic resources
  - Social support
  - Norms for health-related behaviors
  - Stress

Education Status of Adults (18+ years old), Los Angeles County, 2007

- Less than high school: 22.1%
- High school: 18.6%
- Some college or trade school: 24.4%
- College or post graduate degree: 34.9%
Percent of Adults with Less than a High School Diploma, by Race/Ethnicity, LA County

Note: African American, Asian, Pacific Islander, and American Indian Alaska Native categories include persons reporting both Hispanic and non-Hispanic Origin, therefore categories are not mutually exclusive.
Education and Working Conditions

Workers with less education are:

• more likely to hold lower-paying jobs which may put them at higher risk of injury, fatality
  – More occupational hazards, including environmental and chemical exposures (e.g. pesticide, asbestos)
  – Poor working conditions (e.g. shift work, potentially harmful tools)

• less likely to have health-related benefits including paid sick and personal leave, workplace wellness programs, child and elder care resources, retirement benefits or employer-sponsored health insurance
Potential Actions to Improve Educational Attainment

- Increase Nurse Family Partnership
- Expand early childhood development programs
  - E.g., HeadStart, SmartStart, universal pre-kindergarten
- Comprehensive K-12 school reform to improve achievement
- Career Academies
  - Small learning communities within large high schools in low-income, urban areas that usually focus on a specific field and provide preparatory, technical, and occupational courses to connect coursework to job opportunities.
- Mentorship-model programs to improve high school graduation rates
- Programs to help dropouts attain GED certificates
- Targeted programs to improve college enrollment
Policy as a Means to Improve Our Environments and Health

• Historically, policy changes have yielded significant improvements in public health
  – Tobacco: smoking bans
  – Injury prevention: helmet laws, seat belt regulation
  – Disease prevention: sanitation improvements, immunization requirements

• The biggest opportunities to address large disease/illness burdens are often via policy
Policies Can Work on Multiple Levels

• Level 1: \( \downarrow \) burden of disease
  – e.g. Siting schools away from freeways to reduce asthma burden

• Level 2: \( \downarrow \) risk factors for disease
  – e.g. Smoking bans and tobacco retail licensing to reduce smoking opportunities

• Level 3: \( \uparrow \) health physical, social and economic environments
  – e.g. Create a healthier built environment by incorporating health into land use decisions
Health in All Policies Approach

“An innovative strategy that introduces improved population health outcomes and closing the health gap as goals to be shared across all parts of government.

Health in All Policies seeks to address complex health challenges through an integrated policy response across sectors.”
Examples of Sector-based Policy

• Agriculture
  – Direct agricultural subsidies toward more nutritious food (corn/corn syrup → fresh fruits and vegetables)

• Tax
  – Use tax policy to reduce percentage in poverty
  – Increase proportion of eligible residents claiming earned income tax credit

• Transportation
  – Increase development and utilization of mass transit → less driving, more walking → better air and weight loss
  – Complete streets initiatives

• Environment
  – Support environmental policies that improve air quality (e.g., higher CAFE standards, cleaner energy sources)
Health Impact Assessment (HIA)

A systematic process that uses an array of data sources and analytic methods and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population. HIA provides recommendations on monitoring and managing those effects.

How HIA Can Affect Policy-making

Tip the scales
Adding evidence in favor or against a certain course of action

Put new issues on the table
Raising awareness of un-/under-recognized health effects

Change the terms of debate
Encouraging open, transparent decision-making and consideration of best available evidence
How HIA Can Affect Policy-making

Tweak plans
Suggesting measures to modify implementation in ways that minimize potential harm and maximize potential benefits

Bring new parties to the table
Giving voice to concerns of affected stakeholders who have difficulty making their concerns known

Change institutional missions and responsibilities
Encouraging formulation of policies that anticipate potential health effects
Two HIA Flavors

1. Project Oriented
   Primarily physical environment
   (eg. access to parks and green spaces)

2. Policy Oriented
   Physical and social environment
   (eg. living wage and paid leave)
Another Tool: Health Forecasting

Health Forecasting

Evidence-based modeling and prospective analysis of population health in support of advocacy, program design and research in public health.
Using Health Forecasting to Model Scenarios of Interest

• “What-if” scenarios: situations that are not necessarily policy-specific, but spell out alternative future scenarios
  – e.g. how does climate change affect air quality in the future (compared to baseline/no change)?

• Target scenarios: hypothetical action-related scenario
  – e.g. how does a targeted reduction in PM2.5 and Ozone affect future outcomes?

• Intervention scenarios: modeling specific policy intervention
  – e.g. how does a specific policy intervention targeted at improving air quality affect outcomes?

Source: UCLA Health Forecasting Project
Health Impact Assessment and Health Forecasting Compared

**HIA**
- Examine impact of a particular policy or program on exposures and subsequent health outcomes in static population

**Policy and Program Alternatives**

**Behaviors and Exposures**

**Population Health Outcomes**

**Health Forecasting**
- Examine impact of exposures on outcomes in dynamic population (over time)

**Short-Medium Term (2-5 Years)**

**Long Term (10+ Years)**
Conclusion

• Partnerships are critical to address underlying determinants of health
• Policies have significant influence on the environments in which we live
• Public Health has a responsibility to improve health outcomes and aims to achieve that by:
  – Informing decision makers of linkages between health and the underlying determinants
  – Evaluating effectiveness of actions and policies on population health
  – Adding to the scientific literature about what works and what does not
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