The Determinants of Health: Getting to the Root Causes

University of California, Los Angeles
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Warm-Up Exercise

Your health is determined by many factors. In the next 5 minutes allocate a total of 100 points to the factors you believe influence health.

*Example:* $X$ points – your diet/nutrition
One Model of Population Health

Mortality (50%)
- Health behaviors (30%)
  - Tobacco use
- Clinical care (20%)
  - Access to care
  - Quality of care
  - Education
- Social & economic factors (40%)
  - Employment
  - Income
  - Family & social support
  - Community safety
- Physical environment (10%)
  - Environmental quality
  - Built environment

Morbidity (50%)

Health Factors

Programs and Policies

Health Outcomes

County Health Rankings model © 2010 UWPHI
Los Angeles County

• Most populous county in the nation
• Larger population than 43 states
• 26% of Californians live in LA County
  • Over 4,000 square miles
    • 88 incorporated cities
    • ≈140 unincorporated areas
    • 2 islands

Sources: US Census Bureau, State and County QuickFacts - LA County (last rev 6-27-13); California Department of Transportation: LA County Profile (last rev 7-22-13)
Los Angeles County Residents

- 9.9 million residents
- 24% under 18 years old
- 12% over 65 years old
- 16% below poverty level
- 36% foreign born
- Over 140 cultures and 200 languages
- 57% speak a language other than English at home
- ≈1.7 million students in elementary and high school
- Thousands attend 27 community colleges and universities
- ≈ 73,000 residents are homeless

Sources: 1) US Census Bureau, State and County QuickFacts - LA County (last rev 6-27-13); 2) Residents, County of Los Angeles, http://lacounty.gov/wps/portal/lac/residents;
Los Angeles County Residents, by Race/Ethnicity, 2012

- Hispanic or Latino origin: 47%
- White, not Hispanic: 26%
- Asian: 14%
- Black: 9%
- Two or more races: 3%
- American Indian & Alaska Native: 1%

Source: US Census Bureau State & County QuickFacts: Los Angeles County, California
# Leading Causes of Death & Premature Death, LA County, 2010

## 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>12,635</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Stroke</td>
<td>3,278</td>
<td>8</td>
</tr>
<tr>
<td>3.</td>
<td>Lung cancer</td>
<td>2,941</td>
<td>7</td>
</tr>
<tr>
<td>4.</td>
<td>Emphysema/COPD</td>
<td>2,622</td>
<td>15</td>
</tr>
<tr>
<td>5.</td>
<td>Alzheimer's disease</td>
<td>2,242</td>
<td>45</td>
</tr>
<tr>
<td>6.</td>
<td>Pneumonia/influenza</td>
<td>1,964</td>
<td>21</td>
</tr>
<tr>
<td>7.</td>
<td>Diabetes</td>
<td>1,894</td>
<td>10</td>
</tr>
<tr>
<td>8.</td>
<td>Colorectal cancer</td>
<td>1,285</td>
<td>11</td>
</tr>
<tr>
<td>9.</td>
<td>Liver disease</td>
<td>1,171</td>
<td>5</td>
</tr>
<tr>
<td>10.</td>
<td>Breast cancer</td>
<td>1,116</td>
<td>9</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>1.</td>
<td>Coronary heart disease</td>
<td>57,607</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Homicide</td>
<td>28,442</td>
<td>17</td>
</tr>
<tr>
<td>3.</td>
<td>Suicide</td>
<td>22,390</td>
<td>14</td>
</tr>
<tr>
<td>4.</td>
<td>Motor vehicle crash</td>
<td>19,750</td>
<td>18</td>
</tr>
<tr>
<td>5.</td>
<td>Liver disease</td>
<td>19,425</td>
<td>9</td>
</tr>
<tr>
<td>6.</td>
<td>Drug overdose</td>
<td>18,652</td>
<td>19</td>
</tr>
<tr>
<td>7.</td>
<td>Lung cancer</td>
<td>18,100</td>
<td>3</td>
</tr>
<tr>
<td>8.</td>
<td>Stroke</td>
<td>14,709</td>
<td>2</td>
</tr>
<tr>
<td>9.</td>
<td>Breast cancer</td>
<td>12,999</td>
<td>10</td>
</tr>
<tr>
<td>10.</td>
<td>Diabetes</td>
<td>12,221</td>
<td>7</td>
</tr>
</tbody>
</table>

Los Angeles County Department of Public Health, Office of Health Assessment & Epidemiology.

56,538 total deaths and 430,926 years of life lost, excluding infants less than 1 year of age and persons of unknown age.

**Death before age 75 years.
# Leading Causes of Death by Race/Ethnicity, LA County, 2010

<table>
<thead>
<tr>
<th>Race/ethnicity</th>
<th>Number of deaths</th>
<th>Age-adjusted death rate</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>28,738</td>
<td>667 per 100,000</td>
<td>Coronary heart disease 6,845</td>
<td>Emphysema/COPD 1,743</td>
<td>Lung cancer 1,655</td>
<td>Stroke 1,534</td>
<td>Alzheimer’s disease 1,509</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>151 per 100,000</td>
<td>40 per 100,000</td>
<td>40 per 100,000</td>
<td>34 per 100,000</td>
<td>31 per 100,000</td>
</tr>
<tr>
<td>Hispanic</td>
<td>13,751</td>
<td>529 per 100,000</td>
<td>Coronary heart disease 2,555</td>
<td>Stroke 780</td>
<td>Diabetes 690</td>
<td>Liver disease 587</td>
<td>Lung cancer 441</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>111 per 100,000</td>
<td>34 per 100,000</td>
<td>29 per 100,000</td>
<td>18 per 100,000</td>
<td>18 per 100,000</td>
</tr>
<tr>
<td>Black</td>
<td>7,438</td>
<td>891 per 100,000</td>
<td>Coronary heart disease 1,721</td>
<td>Stroke 446</td>
<td>Lung cancer 433</td>
<td>Diabetes 294</td>
<td>Emphysema/COPD 289</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>208 per 100,000</td>
<td>54 per 100,000</td>
<td>51 per 100,000</td>
<td>35 per 100,000</td>
<td>35 per 100,000</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>6,343</td>
<td>429 per 100,000</td>
<td>Coronary heart disease 1,451</td>
<td>Stroke 501</td>
<td>Lung cancer 400</td>
<td>Pneumonia/Influenza 296</td>
<td>Diabetes 237</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>98 per 100,000</td>
<td>34 per 100,000</td>
<td>26 per 100,000</td>
<td>21 per 100,000</td>
<td>16 per 100,000</td>
</tr>
<tr>
<td>Los Angeles County Total*</td>
<td>56,538</td>
<td>615 per 100,000</td>
<td>Coronary heart disease 12,635</td>
<td>Stroke 3,278</td>
<td>Lung cancer 2,941</td>
<td>Emphysema/COPD 2,622</td>
<td>Alzheimer’s disease 2,242</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>138 per 100,000</td>
<td>36 per 100,000</td>
<td>33 per 100,000</td>
<td>30 per 100,000</td>
<td>25 per 100,000</td>
</tr>
</tbody>
</table>

Los Angeles County Department of Public Health, Office of Health Assessment & Epidemiology; August 2013

*Total includes persons of other or unknown race/ethnicity.
# Leading Causes of Premature Death by Race/Ethnicity, LA County, 2010

<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>Suicide</td>
<td>Drug Overdose</td>
<td>Lung cancer</td>
<td>Liver disease</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Coronary heart disease</td>
<td>Homicide</td>
<td>Motor vehicle crash</td>
<td>Liver disease</td>
<td>Suicide</td>
</tr>
<tr>
<td>Black</td>
<td>Coronary heart disease</td>
<td>Homicide</td>
<td>Lung cancer</td>
<td>Stroke</td>
<td>Motor vehicle crash</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>Coronary heart disease</td>
<td>Suicide</td>
<td>Lung cancer</td>
<td>Stroke</td>
<td>Breast cancer</td>
</tr>
<tr>
<td>Los Angeles County Total*</td>
<td>Coronary heart disease</td>
<td>Homicide</td>
<td>Suicide</td>
<td>Motor vehicle crash</td>
<td>Liver disease</td>
</tr>
</tbody>
</table>

*Total includes persons of other or unknown race/ethnicity.
Crude Death Rate for Infectious Diseases, US, 1900 - 2000

* Rate is per 100,000
Number of Tuberculosis Cases, LA County, 2000-2010

AIDS Cases, AIDS Deaths and Persons Living with AIDS, LA County, 1991-2011

1. Number of new cases diagnosed each year.
2. Number of deaths occurred each year among persons reported with AIDS.
3. Number of persons living with AIDS at the end of each calendar year.

*Data are provisional for 2009-11

2012 Estimated Number of Persons Living with HIV and AIDS in Los Angeles County

(1) Estimate that 21.5% of HIV+ in LA County are unaware of their infection; modified from CDC estimate.
(2) Of 4,853 notifications pending investigation, estimate half of 2,400 who have detectable VL or confirmatory test to be unduplicated cases.
(3) Out of the 3,200 cases reported as code, half are thought to represent unduplicated cases.

Source: LAC Division of HIV and STD Programs, reported as of 12/31/2011.
Chronic Diseases are the Leading Cause of Death in the US

Chronic diseases are responsible for 7 out of every 10 deaths


<table>
<thead>
<tr>
<th></th>
<th>1980</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heart disease</td>
<td>Heart disease</td>
</tr>
<tr>
<td>2</td>
<td>Cancer</td>
<td>Cancer</td>
</tr>
<tr>
<td>3</td>
<td>Cerebrovascular diseases (Stroke, hypertension)</td>
<td>Chronic lower respiratory diseases</td>
</tr>
<tr>
<td>4</td>
<td>Unintentional injury</td>
<td>Cerebrovascular diseases (Stroke, hypertension)</td>
</tr>
<tr>
<td>5</td>
<td>Chronic obstructive pulmonary disease</td>
<td>Unintentional injury</td>
</tr>
</tbody>
</table>

Four of the top five causes of death are chronic diseases

Projected Rise in Cases of Seven of the Most Common Chronic Diseases, 2003-2023

- Cancers: 62%
- Mental Disorders: 54%
- Diabetes: 53%
- Heart Disease: 41%
- Hypertension: 39%
- Pulmonary Conditions: 31%
- Stroke: 29%

The Centers for Disease Control and Prevention (CDC) estimates up to...

...could be prevented, if Americans were to do 3 things:

- Stop smoking
- Start eating healthy
- Get in shape

Healthy People 2020 Ecologic Model of Health 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
## Trends in Leading Causes of Death, LA County, 1995-2009

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>1995</th>
<th>2009</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary heart disease</td>
<td>258</td>
<td>129</td>
<td>-50%</td>
</tr>
<tr>
<td>Stroke</td>
<td>60</td>
<td>34</td>
<td>-43%</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>47</td>
<td>31</td>
<td>-34%</td>
</tr>
<tr>
<td>COPD</td>
<td>33</td>
<td>30</td>
<td>-9%</td>
</tr>
<tr>
<td>Alzheimer’s disease</td>
<td>5</td>
<td>21</td>
<td>+320%</td>
</tr>
<tr>
<td>Pneumonia/influenza</td>
<td>44</td>
<td>21</td>
<td>-52%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>22</td>
<td>20</td>
<td>-9%</td>
</tr>
<tr>
<td>Colorectal cancer</td>
<td>20</td>
<td>14</td>
<td>-30%</td>
</tr>
<tr>
<td>Liver disease</td>
<td>13</td>
<td>12</td>
<td>-8%</td>
</tr>
<tr>
<td>Breast cancer (females)</td>
<td>29</td>
<td>21</td>
<td>-28%</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>26</td>
<td>3</td>
<td>-89%</td>
</tr>
<tr>
<td>Homicide</td>
<td>17</td>
<td>7</td>
<td>-59%</td>
</tr>
</tbody>
</table>

Rate (per 100,000)
Age-adjusted to year 2000 U.S. standard population
Source: OHAE, LAC DPH
Coronary Heart Disease Mortality by Race/Ethnicity, LA County, 2001-2009

Los Angeles County Public Health, Office of Health Assessment & Epidemiology
Behavior as a Determinant of Health

Healthy People 2020 Ecologic Model of Health
Trends in Adult Cigarette Consumption, US, 1900–2005

Annual adult per capita cigarette consumption and major smoking and health events

Per-capita updates from U.S. Department of Agriculture, provided by the American Cancer Society.
Costly Toll Of Tobacco

- Tobacco use is single most preventable cause of death, with 10 million annual deaths estimated by 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

- One million+ smokers in LAC.

- Adult smoking prevalence was at 13.1% in 2011

- 1 out of every 7 deaths in LAC is caused by tobacco use (≈ 9,000 deaths)
Prevalence of Cigarette Smoking by Age, LA County, 2011

Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24</td>
<td>9.7</td>
</tr>
<tr>
<td>25-29</td>
<td>20.3</td>
</tr>
<tr>
<td>30-39</td>
<td>16</td>
</tr>
<tr>
<td>40-49</td>
<td>13.1</td>
</tr>
<tr>
<td>50-59</td>
<td>14.5</td>
</tr>
<tr>
<td>60-64</td>
<td>8.4</td>
</tr>
<tr>
<td>65+</td>
<td>7.6</td>
</tr>
</tbody>
</table>
The Toll of Alcohol

- 2,500 people in LA County die from alcohol-related causes each year
  - Roughly 78,000 years of potential life lost
- Alcohol is associated with digestive diseases, neuropsychiatric conditions, cardiovascular disease, malignant neoplasms, pregnancy-related conditions, fetal alcohol syndrome, and high risk sex
- Alcohol has been implicated in DUIs, falls, suicide, poisonings and occupational injuries
- Excessive alcohol consumption costs LA County an estimated $10.8 billion annually

Percent of Adults who Reported Binge Drinking in the Past Month in LA County, 2002-2011

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.

Source: LA County Health Survey
Percent of Adults who Reported Binge Drinking in the past month, by Gender in LA County, 2011

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.

Source: LA County Health Survey
Drug Abuse in Los Angeles County

• Over 60,000 residents were admitted to publicly funded treatment programs from 2009-2010

• Most frequently reported drugs for which treatment was received were:
  - marijuana/hashish (27%)
  - alcohol (26%)
  - methamphetamine (18%)
  - cocaine/crack (13%)
# Drug Use Among LA County High School Students*, Grades 9-12

<table>
<thead>
<tr>
<th>Drug Use</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have ever used marijuana</td>
<td>37.6%</td>
</tr>
<tr>
<td>Currently use marijuana</td>
<td>19.3%</td>
</tr>
<tr>
<td>Have ever used cocaine</td>
<td>9.7%</td>
</tr>
<tr>
<td>Currently use cocaine</td>
<td>3.6%</td>
</tr>
<tr>
<td>Have ever used inhalants</td>
<td>16.9%</td>
</tr>
<tr>
<td>Have ever used ecstasy</td>
<td>11%</td>
</tr>
<tr>
<td>Have ever used heroine</td>
<td>3.8%</td>
</tr>
<tr>
<td>Have ever used methamphetamines</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

*Youth Risk Behavior Surveillance 2009, Centers for Disease Control & Prevention

*“Current use” is that which occurred in the 30 days prior to the survey
Opioid Prescriptions Filled by Fiscal Year, LA County, 2007-2012

Source: Department of Justice, California Prescription Monitoring Program/ Controlled Substance Utilization Review and Evaluation System (CURES) data.
Hospitalizations and Emergency Department (ED) Visits for Opioid Dependence/Abuse, LA County, 2005-2010

Source: Office of Statewide Health Planning and Development, Hospital Discharge and Emergency Department Visit Data. Prepared by LA County Department of Public Health, Injury and Violence Prevention Program.
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
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%

Self Reported Levels of Physical Activity Among Adults in LA County, 2011

- Active (meets guidelines): 62%
- Some Activity (does not meet guidelines): 26%
- Minimal to No Activity (sedentary): 12%

Makes you wonder how many of these...
are actually these?
Prevalence of Adult Obesity, LA County, 1997-2011

Los Angeles County Health Survey
Department of Public Health
Prevalence of Obesity & Diabetes Among Adults in LA County, 1997-2011

Year


Obesity

14.3% 16.7% 18.9% 20.9% 22.2% 23.6%

Diabetes

5.7% 6.7% 7.0% 8.1% 8.7% 9.5%
Prevalence of Obesity Among 5th, 7th, and 9th Graders in LA County Public Schools, CA Physical Fitness Testing, 1999-2010

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, LA County, 2003-2010

Source: PHFE WIC Program, LA County
## 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>
<tr>
<td><strong>Ave Median Household Income</strong></td>
<td><strong>$99,555</strong></td>
<td></td>
</tr>
</tbody>
</table>

### 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>
<tr>
<td><strong>Ave Median Household Income</strong></td>
<td><strong>$37,747</strong></td>
<td></td>
</tr>
</tbody>
</table>

*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
### Cost of Overweight, Obesity & Physical Inactivity - California, 2006

<table>
<thead>
<tr>
<th></th>
<th>Billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Care</td>
<td>$20.7</td>
</tr>
<tr>
<td>Lost Productivity</td>
<td>$20.4</td>
</tr>
<tr>
<td>Total</td>
<td>$41.2*</td>
</tr>
</tbody>
</table>

Projected Cost for 2011: **$52.7 BILLION**

*Figures may not add to total due to rounding*
Changes in Future Life Expectancies Related to Obesity and Diabetes

• Life expectancy has steadily increased over the past two centuries.

• Current rates of obesity projected to reduce life expectancy by .33 to .75 years over the next century.

• If rates of obesity and diabetes continue to increase at current rates, reductions in life expectancy may be to 2 to 5 years, or more

Olshansky et al  NEJM  March 17, 2005
Portion Control Campaign

- "Choose Less, Weigh Less"

- With bigger food portions come more calories, and consuming extra calories can lead to obesity, diabetes, heart disease and some cancers.

- Campaign includes advertising on transit shelters, buses, rail cars, billboards, television, radio and online.

Videos of portion size PSAs can be found at:
http://www.youtube.com/playlist?list=UUJLnJaiTK2jnRhYWycp865g&feature=plcp
Rethink Your Drink Campaign

• 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.
Different Approaches to Addressing Overweight/Obesity: Personal Eating Behavior

- Share meals
- Partially fill beverage containers
- Avoid ‘supersizing’
- Ask for reduced portion options
- Compare nutritional values of your choices on labeled menus
Different Approaches to Addressing Overweight/Obesity: Eating Outside the Home

- Promote healthy eating in workplaces and schools
- Remove sweetened beverages and junk food from vending machines (schools, public agencies, businesses)
- Create incentives for restaurants and cafeterias that offer healthy food items
- Schools can promote participation in the School Breakfast Program and reduce high calorie snack opportunities in the classroom (e.g. birthday treats)
## Strategies for Improving the Physical Environment for Nutrition

<table>
<thead>
<tr>
<th>Current</th>
<th>Environmental Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased marketing of junk food, tobacco, and alcohol</td>
<td>Place limits on marketing of junk food to children (around schools, parks…)</td>
</tr>
<tr>
<td>Decreased access to fresh, nutritious, affordable food</td>
<td>Promote local public markets</td>
</tr>
<tr>
<td></td>
<td>Provide incentives for businesses that provide healthy food</td>
</tr>
<tr>
<td>Proliferation of fast food restaurants</td>
<td>Use zoning tools to limit the location and density of fast food restaurants</td>
</tr>
</tbody>
</table>

Source: Public Health Institute
Physical and Social Environments as Determinants of Health

Healthy People 2020 Ecologic Model of Health
Our Environments Matter
One Model of Population Health

Health Outcomes
- Mortality (50%)
- Morbidity (50%)

Health Factors
- Health behaviors (30%)
- Clinical care (20%)
- Social & economic factors (40%)
- Physical environment (10%)

Programs and Policies

Mortality (50%)
- Tobacco use
- Diet & exercise
- Alcohol use
- Unsafe sex

Morbidity (50%)
- Access to care
- Quality of care
- Education
- Employment
- Income
- Family & social support
- Community safety
- Environmental quality
- Built environment

County Health Rankings model © 2010 UWPHI
What is a Healthy Community?

1. Meets basic needs of all
2. Provides quality and sustainable environment
3. Maintains adequate levels of economic and social development
4. Promotes health
5. Fosters social relationships that are supportive and respectful

Adapted from Health in All Policies Task Force Report to the Strategic Growth Council, Dec 3 2010 and presentations by CDPH, Linda Rudolph, MD, MPH.
Healthy Communities: Meet Basic Needs of All

• Safe, sustainable, accessible, & affordable transportation options
• Affordable, accessible, and nutritious foods
• Affordable, high quality, socially integrated and location-efficient housing
• Affordable, high quality health care
• Complete and livable communities including high quality schools, parks and recreation facilities, child care, libraries, financial services and daily needs

Adapted from Health in All Policies Task Force Report to the Strategic Growth Council, Dec 3 2010 and presentations by CDPH, Linda Rudolph, MD, MPH.
Healthy Communities: Provide Quality and Sustainable Environments

- Clean air, soil, and water, and environments free of excessive noise
- Tobacco and smoke free
- Preserved natural and open spaces, including agricultural lands
- Minimize waste, toxic chemicals, & harmful emissions

Adapted from Health in All Policies Task Force Report to the Strategic Growth Council, Dec 3 2010 and presentations by CDPH, Linda Rudolph, MD, MPH.
Healthy Communities: Maintain Adequate Levels of Economic and Social Development

• Adequate, safe, and healthy job opportunities for all
• Support for healthy development of children and adolescents
• Opportunities for high quality and accessible education

Adapted from Health in All Policies Task Force Report to the Strategic Growth Council, Dec 3 2010 and presentations by CDPH, Linda Rudolph, MD, MPH.
Healthy Communities: Promote Health

• Access to coordinated, quality health care services

• Access to preventive care to minimize development of chronic disease

Adapted from Health in All Policies Task Force Report to the Strategic Growth Council, Dec 3 2010 and presentations by CDPH, Linda Rudolph, MD, MPH.
Healthy Communities: Foster Supportive and Respectful Social Relationships

- Robust social and civic engagement

- Socially cohesive and supportive relationships, families, homes, and neighborhoods

- Safe communities free of crime and violence

Adapted from Health in All Policies Task Force Report to the Strategic Growth Council, Dec 3 2010 and presentations by CDPH, Linda Rudolph, MD, MPH.
BREAK
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)
Commuting

• Los Angeles has the nation's worst Travel Time Index\(^1\)
  – 107 minutes is average total travel time per typical weekday when commuting at peak times

• According to national statistics, Los Angeles is among the top 10 U.S. cities with the most long-distance commuters.

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1) Texas Transportation Institute: 2011 Urban Mobility Report, September 2011
2) LA Times, September 2006
The more we drive and the more our built environment favors driving the less fit we are and the hotter our climate becomes.

Adapted from Dr. Richard Jackson
Let’s Play “Spot the Pedestrian”
Economic Benefits of Open Spaces and Walkable Community Design

- Open spaces and recreation areas can positively affect property values
  - benefits homeowners
  - higher property tax revenue for local governments
- Compact, walkable developments = economic benefits to developers
  - higher home sale prices
  - enhanced marketability
  - faster sales or leases
- Other direct and indirect benefits
  - reducing air pollution
  - flood control
  - improved water quality
  - facilitating healthy lifestyles
Summary of Health Effects of Air Pollution

• Amount of goods transported through CA projected to nearly quadruple between 2000 and 2020\(^1\)

• Will have significant impact on air quality and health\(^2\)

• Diesel particulate matter (PM)
  – concentrated around ports, rail yards, & heavily trafficked roads\(^3\)
    - premature deaths
    - cancer
    - respiratory disease
    - lost workdays
    - global warming (2\(^{nd}\) to CO\(_2\))

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1 (Cal EPA, 2005); 2 (Pacific Institute, 2006)
3 (CA/EPA Air Resources Board); 4 (CA/EPA Air Resources Board, 2004)
Some Examples of Societal 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

Healthy People 2020 Overview - Social Determinants of Health
Poverty US, CA, LA County: All Ages

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

Median Household Income

- $60,000+
- $45,000-$59,999
- $35,000-$44,999
- $25,000-$34,999
- 0-$24,999

Life Expectancy at Birth in Years

- 82.9
- 80.6
- 79.6
- 79.0
- 77.5

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
Percent of Persons Living Below the Federal Poverty Level, by Race/Ethnicity, LA County

<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
Family Poverty Rates* and Education Level, California, 2010

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)

Photo credit: Ruby Washington, New York Times
Improved Educational Outcomes

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

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

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

U.S. Census Bureau, 2005-2009. 5-Year American Community Survey, Table B15002 &C15002
Education and Working Conditions

Workers with less education are more likely to:

- hold lower paying jobs
- have occupational hazards (e.g. pesticide, asbestos exposures)
- have poor working conditions (e.g. shift work)
Education and Working Conditions

Workers with less education are less likely to:

- have paid sick & personal leave
- receive retirement benefits
- have child or elder care resources
Potential Actions to Improve Educational Attainment

- Increase Nurse Family Partnership
- Expand early childhood development programs
  - E.g., HeadStart, SmartStart, universal pre-K
- Comprehensive K-12 school reform to improve achievement
- Mentorship-model programs to improve high school graduation rates
- Programs to help dropouts attain GED certificates
- Targeted programs to improve college enrollment

What is Public Health?

“...public health is what we, as a society, do collectively to assure the conditions for people to be healthy.”

- *The Future of Public Health*
  IOM 1988

- *The Future of the Public’s Health in the 21st Century*
  IOM 2003
Public Health is...

*Science of protecting and improving community health by:*

- Using preventive medicine to reduce the community risk for various diseases
- Educating the public about things they can do to improve their health (e.g., diet, exercise, safer sex)
- Controlling the spread of disease
- Monitoring environmental hazards
- Promoting policies that improve health

*Focused on population and communities, not just individuals*
Defining Public Health: 3 Core Functions

• Assessment
  – Conduct surveillance to measure the health of the population and determinants; investigate health problems and identify causes

• Policy Development
  – Inform leaders and the public about health; develop policy solutions and mobilize support

• Assurance
  – Ensure population health by having a competent workforce to enforce laws; medical care available to all; evaluate progress as part of a quality improvement cycle

Public Health’s Top 10 Accomplishments During the 20th Century

Today, Americans live about 30 years longer than in 1900 mostly due to Public Health efforts

- Developing vaccinations
- Ensuring safer workplaces
- Controlling infectious diseases
- Decreasing deaths from heart disease/stroke
- Ensuring safer and healthier foods
- Increasing family planning options
- Recognizing tobacco use is harmful
- Developing motor-vehicle safety policies
- Improving health for mothers and babies

Source: Centers for Disease Control and Prevention
Los Angeles County Department of Public Health

• Vision: Healthy People in Healthy Communities

• Mission: To protect health, prevent disease, and promote health and well-being

• Departmental Stats:
  – Annual budget over $850 million
  – Nearly 4,000 employees
Some of Our Staff

✓ Public Health Nurses
✓ Health Educators
✓ Epidemiologists
✓ Physicians
✓ Community Workers
✓ Public Health Investigators
✓ Environmental Health Specialists
✓ Microbiologists
✓ Nutritionists
✓ Researchers
✓ Veterinarians
Major Public Health Responsibilities

✓ Preventing and Controlling Disease

✓ Promoting Good Health

✓ Protecting Health with Safe and Healthy Environments
Public Health & Health Protection

• Early warning, emergency preparedness planning & response
  – 24/7 disease surveillance
  – State-of-the-art laboratory
  – One-of-a-kind partnerships
  – Biological, radiological terrorism
  – Action-oriented response to emerging infections

• Assuring conditions to protect health
  – Housing and food facility inspections
  – Childhood lead poisoning prevention
  – Licensure of hospitals/long term care facilities
Greater Attention to Public Health Risks & Threats, and Preparedness Overall

- Naturally emerging disease threats such as pandemic flu, E. coli, West Nile Virus, SARS
- Diseases used as weapons – anthrax, plague, smallpox
- September 11th generated greater emphasis on preparedness
- Preparedness is not really new to us in CA “earthquake country”
- The public’s health has been enhanced by substantial investments from CDC, State, and local funds.
How We Can Reduce Overall Disease & Injury Burden

**Level 1** – Treating disease conditions
- e.g. enhancing disease management for diabetes

**Level 2** – Reducing disease risk factors & promoting protective factors
- e.g. improve nutrition and increase physical activity to prevent obesity

**Level 3** – Focus on underlying determinants of disease
- e.g. ensure opportunities for people to achieve optimal health by
  - Supporting anti-poverty programs so people can afford to eat healthfully
  - Supporting the development of greenspaces and parks so people can be active
Framework for Action: General Model of Health & Improvement Strategies

Framework for Action: Applied to Type 2 Diabetes

How Do We Know What Works?

- Recommendations for policy and practice, programs and services
- Intervention results and effectiveness
The Guides Are Complementary

**Individual level**
Clinical settings
Delivered by healthcare providers
Screening, Counseling, etc.

**Clinical Guide**
(USPSTF Recommendations)

**Group level**
Health system changes
   Insurance/benefits coverage
   Access to/provision of services
Community, population-based
   Informational (Group Education, Media)
   Behavioral, Social, Environmental & Policy Change

**Community Guide**
(TFCPS Recommendations)
The Guides: Selecting Interventions for Systematic Review

- Over 1,000 single and multi-component interventions to evaluate
- Those evaluated to date selected on their potential to:
  - burden of disease and injury
  - healthy behaviors and reduce unhealthy behaviors
  - implementation of effective interventions that are not widely used
  - level of interest among providers and decision makers consistent with resource constraints
Why Evidence is Essential

• Aids in efficiency – doing what we know works first

• Increases accountability by supporting more efficient use of public and private resources

• Provides a higher likelihood of successful programs and policies being implemented (opportunity cost of using non-evidence based strategies can be very high)
