Understanding The Root Causes of Poor Health In Alameda County

The Challenge of Achieving Equity

Anthony Iton, M.D., J.D., MPH
Alameda County Health Officer

Castro Valley Community Meeting
June 7, 2007
<table>
<thead>
<tr>
<th><strong>Castro Valley vs. AC</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>✨ Wealthier</td>
</tr>
<tr>
<td>✨ Less diverse</td>
</tr>
<tr>
<td>✨ Older</td>
</tr>
</tbody>
</table>
Figure 18: Life Expectancy at Birth, Alameda County, 1960-2003

- **Y-axis:** Life Expectancy (Years)
- **X-axis:** Years (1960-2002)
- **Legend:**
  - Black: All Races
  - Orange: White
  - Brown: Other

Life Expectancy by Tract

Life Expectancy at Birth
- Green: > 80.0
- Yellow: 74.3 - 80.0
- Red: < 74.3

Leading Causes of Death, Alameda County, 2001-2003 (N=28,790)

- Heart Disease: 26.9%
- Cancer: 23.7%
- Stroke: 8.3%
- Chronic Lower Resp Dis: 4.5%
- Unintentional Injuries: 3.6%
- Influenza & Pneumonia: 3.2%
- Diabetes Mellitus: 3.0%
- Alzheimer's Disease: 2.1%
- Chronic Liver Dis/Cirrhosis: 1.4%
- Homicide: 1.3%

Total Deaths: 67%
Cardiovascular Disease
Coronary Thrombosis With Infarction
Coronary Heart Disease Mortality Rate, 2000-2004

Age-Adjusted Rate per 100,000

- >1.5 times HP2010 objective
- 1-1.5 times HP2010 objective
- <=HP2010 objective (166/100,000)

County rate: 163.1/100,000

Source: CAPE, with data from vital statistics files.
Coronary Heart Disease

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cherryland</td>
<td>199</td>
</tr>
<tr>
<td>Alameda</td>
<td>185</td>
</tr>
<tr>
<td>San Lorenzo</td>
<td>180</td>
</tr>
<tr>
<td>Hayward</td>
<td>167</td>
</tr>
<tr>
<td>Livermore</td>
<td>165</td>
</tr>
<tr>
<td>Castro Valley</td>
<td>163</td>
</tr>
<tr>
<td>Oakland</td>
<td>159</td>
</tr>
<tr>
<td>Fremont</td>
<td>154</td>
</tr>
<tr>
<td>Union City</td>
<td>153</td>
</tr>
<tr>
<td>Newark</td>
<td>151</td>
</tr>
<tr>
<td>Emeryville</td>
<td>148</td>
</tr>
<tr>
<td>Ashland</td>
<td>148</td>
</tr>
<tr>
<td>Alameda County</td>
<td>147</td>
</tr>
<tr>
<td>Fairview</td>
<td>147</td>
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<tr>
<td>San Leandro</td>
<td>144</td>
</tr>
<tr>
<td>Reasonton</td>
<td>137</td>
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<tr>
<td>Albany</td>
<td>134</td>
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<tr>
<td>Berkeley</td>
<td>128</td>
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<tr>
<td>Dublin</td>
<td>117</td>
</tr>
<tr>
<td>Redmont</td>
<td>91</td>
</tr>
</tbody>
</table>
Asthma
Map 4: Childhood Asthma (<5 years) Hospitalization, Alameda County, 2001-2003

Age-Adjusted Rate per 100,000
- >2 times HP2010 objective
- 1 to 2 times HP2010 objective
- <=HP2010 objective
- NA

HP2010 objective: 250/100,000 children <5 years
Annual county rate: 683/100,000 children <5 years

Source: CAPE; OSHPD, Census 2000, DOF
Census Tract Asthma Emergency Room Visit Rate

Source: CAPE, with data from Eden Medical Center.
Mortality

Access to health care

Chronic disease
Infectious disease
Injury (intentional and unintentional)

Disease and Injury

Mortality

10 – 15%

Genetics

10 – 15%
Causes of Differences in Health Outcomes

- Genetics  10-15%
- Access to health care  10-15%

15% + 15% = only 30%

What causes the other 70%???
Individual health knowledge

70% ??

Medical Model

Smoking
Nutrition
Physical activity

Risk Behaviors → Disease and Injury → Mortality

Violence
Is This All About Personal Responsibility???

The Medical Model Assumes that “Risk Behaviors” are the Missing 70%
The Obesity Epidemic
The Basic Problem

- More foods available everywhere
- More meals out with bigger meals
- More large volume sugar-sweetened beverages
- Aggressive food advertising

- More TV, video, computers
- More car travel
- Fewer PE classes
- Fewer safe walking/bike routes
- Lower perception of safety

Increased Energy Intake  Decreased Energy Expenditure
**Figure 1**
Annual soft drink production in the United States (12-oz. cans/person)


**Figure 2**
Growth in soda container size (oz.)
### Table 6
Low soft-drink prices promote consumption

<table>
<thead>
<tr>
<th>Beverage</th>
<th>Cost</th>
<th>Cost per quart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cola, supermarket brand</td>
<td>$0.59/2 liters</td>
<td>$0.28</td>
</tr>
<tr>
<td>Coca-Cola</td>
<td>$0.69/2 liters</td>
<td>$0.33</td>
</tr>
<tr>
<td></td>
<td>$2.50/6½ liters</td>
<td>$0.79</td>
</tr>
<tr>
<td></td>
<td>$2.67/12 12-oz. cans</td>
<td>$0.59</td>
</tr>
<tr>
<td>Pepsi-Cola</td>
<td>$2.50/12 12-oz. cans</td>
<td>$0.56</td>
</tr>
<tr>
<td></td>
<td>$0.79/2 liters</td>
<td>$0.37</td>
</tr>
<tr>
<td>Sierra Mist</td>
<td>$0.89/2 liters</td>
<td>$0.42</td>
</tr>
<tr>
<td>Cranberry Juice Cocktail</td>
<td>$1.99/64 oz.</td>
<td>$1.00</td>
</tr>
<tr>
<td>Capri Sun Juice</td>
<td>$2/10 6⅔ oz. pouches</td>
<td>$0.95</td>
</tr>
<tr>
<td>Bottled water (supermarket brand)</td>
<td>$0.89/gallon</td>
<td>$0.22</td>
</tr>
<tr>
<td>Bottled spring water (supermarket brand)</td>
<td>$0.89/gallon</td>
<td>$0.22</td>
</tr>
<tr>
<td>Seltzer water, club soda, supermarket brand</td>
<td>$0.89/2 liters</td>
<td>$0.42</td>
</tr>
<tr>
<td>Dannon water</td>
<td>$5.99/24 16.9-oz. bottles</td>
<td>$0.47</td>
</tr>
<tr>
<td>Milk</td>
<td>$2.99/gallon</td>
<td>$0.75</td>
</tr>
<tr>
<td></td>
<td>$0.95/quart</td>
<td>$0.95</td>
</tr>
<tr>
<td>Orange juice, frozen, supermarket brand</td>
<td>$1.49/12-oz. can</td>
<td>$0.99</td>
</tr>
<tr>
<td>Tropicana Orange Juice</td>
<td>$1.88/64 oz.</td>
<td>$0.94</td>
</tr>
<tr>
<td>Florida’s Natural Orange Juice</td>
<td>$2.50/64 oz.</td>
<td>$1.25</td>
</tr>
</tbody>
</table>

**Source:** Prices at Washington, D.C., area stores, late 2004–early 2005; many prices are specials.
Milk vs. Soda Consumption

Industry Perspective

• “A growing body of scientific evidence by governmental and academic researchers, looking specifically at soft drink consumption, shows there is no connection between soft drink consumption and health problems, including obesity, tooth decay and bone health.”

• - National Soft Drink Association website
Industry Perspective

• “Limiting calories in schools is a sensible approach that acknowledges our industry’s long-standing belief that school wellness efforts must focus on teaching kids to consume a balanced diet and exercise more. Schools provide an opportunity to create a healthy environment that equips our children with these skills. Our industry will continue to do its part to contribute that environment.”

-Susan Neely, CEO American Beverage Association
The Alliance and Industry leaders set healthy school beverage guidelines for U.S. schools

The Alliance for a Healthier Generation – a joint initiative of the William J. Clinton Foundation and the American Heart Association – has worked with representatives of Cadbury Schweppes, Coca-Cola, PepsiCo, and the American Beverage Association to establish new guidelines to limit portion sizes and reduce the number of calories available to children during the school day. Under these guidelines, only lower calorie and nutritious beverages will be sold to schools.
Obesity Trends* Among U.S. Adults

BRFSS, 1985

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1986

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1987

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1988

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1989

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1990

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1991

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1992

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1993

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1994
(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1995

(*BMI ≥ 30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1996

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1997

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1998

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1999

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 2000

(*BMI ≥ 30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 2001

(*BMI ≥30, or ~ 30 lbs overweight for 5' 4" person)
Obesity Trends* Among U.S. Adults
BRFSS, 2002

(*BMI ≥30, or ~ 30 lbs overweight for 5'4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 2003

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 2004

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Figure 1. Prevalence of overweight among children and adolescents ages 6-19 years


SOURCE: CDC/NCHS, NHES and NHANES
It Strikes 16 Million Americans
Are You at Risk?

An American Epidemic
Diabetes

The silent killer: Scientific research shows a "persistent explosion" of cases—especially among those in their prime.

By Jerry Adler and Claudia Kalb
CDC: Diabetes to afflict 1 in 3 born in 2000

Scientist says kids must eat healthier, exercise more

By JANET McCONNIAUHGEY
Associated Press

New Orleans — One in three U.S. children born in 2000 will become diabetic unless many more people start eating less and exercising more, a scientist with the Centers for Disease Control and Prevention warned Saturday.

The odds are worse for African-American and Latino children. Nearly half of them are likely to develop the disease, said Dr. K.M. Venkat Narayan, a diabetes epidemiologist at the CDC.

“I think the fact that the diabetes epidemic has been raging has been well-known to us for several years. But looking at the risk in these terms was very shocking to us,” Narayan said.

The 33 percent lifetime risk is about triple the American Diabetes Association’s current estimate.

by 2050, to 29 million, an earlier CDC study by Narayan and others found.

“These estimates I am giving you now are probably quite conservative,” Narayan said in an interview before the diabetes association’s annual scientific meeting here.

Narayan said it would be difficult to say whether undiagnosed cases would rise at the same rate.

If they did, that could push the 2050 figure to 40 million or more.

Doctors had known for some time that Type 2 diabetes — what used to be called adult-onset diabetes because it typically showed up in middle-aged people — is on the rise, and that patients are getting younger.

Nobody else had crunched the numbers to look at current odds of getting the disease, Narayan said.

Overall, he said, 39 percent of the girls who now are healthy 2½ to 3-year-olds and 33 percent of the boys are likely to develop diabetes, he said.

For Latino children, the odds are closer to one in two: 55 percent of the girls and 45 percent of the boys. The numbers are about 49 percent and 40 percent for African-American girls and 38 percent and 32 percent for Latino children.
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.
Obesity and Poverty in Alameda County School Districts 2000-2003

- % Overweight
- % Poverty

Graph showing the comparison of % Overweight and % Poverty across different districts in Alameda County School Districts from 2000 to 2003.
Individual health knowledge

70% ??

Medical Model

Smoking
Nutrition
Physical activity

Risk Behaviors

Disease and Injury

Mortality

Violence
What About The Environment?
Community Trajectories

How Much Does *Place* Matter?
Tract Poverty vs. Life Expectancy

Alameda County

San Francisco County

Contra Costa County
Bay Area Poverty vs. Life Expectancy

BARHII Life Expectancy and Poverty by Tract

The scatter plot shows the relationship between poverty rate and life expectancy for different tracts in the Bay Area. The data points are distributed along a trend line, indicating a negative correlation between poverty rate and life expectancy.
Life Expectancy by Tract

High school grads: 90%
Unemployment: 4%
Poverty: 7%
Home ownership: 64%
Non-White: 49%

High school grads: 81%
Unemployment: 6%
Poverty: 10%
Home ownership: 52%
Non-White: 59%

High school grads: 65%
Unemployment: 12%
Poverty: 25%
Home ownership: 38%
Non-White: 89%
High school grads: 90%
Unemployment: 4%
Poverty: 7%
Home ownership: 64%
Non-White: 49%

High school grads: 81%
Unemployment: 6%
Poverty: 10%
Home ownership: 52%
Non-White: 59%

High school grads: 65%
Unemployment: 12%
Poverty: 25%
Home ownership: 38%
Non-White: 89%

Life Expectancy
>80
74.3 - 80
<74.3
Neighborhood Context

- Parks & recreational space
- Walkability, bikeability
- Access to amenities
- Concentration of alcohol outlets, fast food
- Housing stock
- Point sources of pollution
- Jobs
Street Networks — Summary of the Literature

- Poor network connectivity reduces pedestrian mobility and trips.
- As the number of intersections and blocks increase, the number of walk trips increase.
- As the number of cul-de-sacs and loops increase, the number of walk trips decrease.
Land Use Pattern Affects Travel — Higher Density can reduce Vehicle Trips

Significant reduction as we go from 3-4 units/acre to over 20 units/acre

Source: John Holtzclaw, PhD, Sierra Club
Overall: Compared to 1969
Americans drive:
- 88% farther to shop
- 137% farther for errands

Mega-Mileage Moms
• Family “chauffeur”

• Average minutes per day spent in car:
  - Women overall: 64 minutes
  - Single mothers: 75 minutes

Surface Transportation Policy Project: 2000
We have changed how much we walk or bike

- Percent of children who walk or bike to school:
  - 1974: 66%
  - 2000: 13%

(CDC, 2000)

Population Growth

Vehicle Miles Traveled

70% 162%
New Awareness?

The perfect invention for the most obese nation on Earth...the Segway transporter!

Don’t Walk

Walk can’t walk

The way cities and suburbs are developed could be bad for your health

By Martha T. Moore
USA Today

Why don’t Americans walk anywhere?

Old answer: They’re lazy.
New answer: They can’t.

There is no sidewalk outside the front door, school is 6 miles away, and there’s a 3-lane highway between home and the supermarket.

Many experts on public health say the way neighborhoods are built is to blame for America’s physical inactivity — and the resulting epidemic of obesity.

The health concern is a new slant on the issue of suburban sprawl, which metro regions have been struggling with for a decade. These health experts bring the deep-pocketed force of private foundations and public agencies into discussions about what neighborhoods should look like.

The argument over whether suburbs are bad for your health will hit many Americans precisely where they live: in a house with a lawn over 200 feet in diameter.

“The potential for actually tackling some of these things, with the savvy of the folks who have tackled tobacco, is enormous,” says Ellen Vanderford, head of America Walks, a pedestrian advocacy group based in Portland, Ore.

A study by the National Centers for Disease Control and Prevention is tracking 6,000 residents of Atlanta to determine whether the neighborhood they live in influences their level of physical activity. The Robert Wood Johnson Foundation in New Jersey.

Please see COVER STORY next page

By Martha T. Moore, USA Today
Institutional Power > Neighborhood Conditions > Risk Behaviors > Disease and Injury > Mortality
Figure 1.12: Eighth Grade CST Score 2004-2005 and Free and Reduced Price Lunch, 2003-2004, by School Districts

- **CST English-Language Arts Mean Scaled Score**
- **% Enrolled in Free and Reduced Price Lunch Program**

Source: CAPE; Dataquest and Ed-Data.
Castro Valley Unified District 2006
4th Grade Reading Level

<table>
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<tr>
<th>Ethnicity</th>
<th>Prof/Adv</th>
<th>Basic</th>
<th>Below Basic</th>
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<tr>
<td>Black</td>
<td>27%</td>
<td>30%</td>
<td>43%</td>
</tr>
<tr>
<td>Latino</td>
<td>18%</td>
<td>30%</td>
<td>52%</td>
</tr>
<tr>
<td>White</td>
<td>15%</td>
<td>7%</td>
<td>78%</td>
</tr>
<tr>
<td>Asian</td>
<td>11%</td>
<td>6%</td>
<td>83%</td>
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Castro Valley Unified District 2006
8th Grade Reading Level

Castro Valley Unified District 2006
11th Grade Reading Level

<table>
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<th>Race</th>
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<tbody>
<tr>
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<td>53%</td>
<td>26%</td>
<td>14%</td>
</tr>
<tr>
<td>Latino</td>
<td>33%</td>
<td>21%</td>
<td>14%</td>
</tr>
<tr>
<td>White</td>
<td>49%</td>
<td>26%</td>
<td>25%</td>
</tr>
<tr>
<td>Asian</td>
<td>64%</td>
<td>22%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Mortality Rate and % HS Education
Alameda County Census Tracts
2000-2003
Race/ethnicity

Class

Gender

Social Inequalities → Institutional Power → Neighborhood Conditions → Risk Behaviors → Disease and Injury → Mortality

Immigration status
Results of the statistical comparison of weather and deaths over 12 years show that blacks and those with a high school education or less are most likely to die on extremely hot days. – Harvard School of Public Health study of almost 8 million deaths in 50 cities from 1989 to 2000.
Chicago also suffers from an everyday "emergency in slow motion" that its leaders refuse to acknowledge. The heat wave was a particle accelerator for the city: It sped up and made visible the hazardous social conditions that are always present but difficult to perceive. Yes, the weather was extreme. But the deep sources of the tragedy were the everyday disasters that the city tolerates, takes for granted, or has officially forgotten.

-Eric Klineberg, author of Heat Wave
A Proposed Model

Understanding Health In Context
Health Inequities

- Bay Area Regional Health Inequities Initiative

Socio-Ecological Model

Medical Model

UPSTREAM SOCIAL FACTORS

SOCIAL INEQUALITIES
- Class
- Race/ethnicity
- Gender
- Immigration Status

INSTITUTIONAL POWER
- Corporations & other businesses
- Gov't agencies
- Schools

NEIGHBORHOOD CONDITIONS
- Environment
- Social
- Physical
- Residential
- Segregation

INDIVIDUAL HEALTH KNOWLEDGE

RISK BEHAVIORS
- Smoking
- Nutrition
- Physical activity
- Violence

GENETICS

DISEASE & INJURY
- Infectious disease
- Chronic disease
- Injury (intentional & unintentional)

DOWNSTREAM HEALTH STATUS

MORTALITY
- Infant mortality
- Life expectancy

HEALTH CARE ACCESS