Is obesity a class issue?

Can you reduce obesity rates without doing anything about poverty?
Differences between EU and US

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>EU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity rates vary by SES</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Obesity trends vary by SES</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>SES determines diet quality</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Healthier diets cost more</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Healthier foods cost more</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

First question: Is there a socioeconomic gradient in obesity rates?

The US Behavioral Risk Factors Surveillance System (BRFSS) says no

Telephone survey of ~2,000 households per state conducted by State DOHs and the CDC
Obesity in US 2005 by state

"There is some difference…but many states are almost identical in their obesity rates, so ranking them is essentially worthless from a statistical perspective."

Michael Link, a senior survey methodologist at the CDC.

USA Today 8/23/2005

Obesity trends: BRFSS (2002) data from the CDC (BMI ≥ 30)
Right panel: NY Times 08/24/05

Prevalence of obesity by income and education in the US
(CDC/NHCS data for 2002 cited in Drewnowski & Specter, 2004)
Is there a difference in time trends by SES?

BRFSS data say no

Trends in obesity by education + income

(US Data from BRFSS, calculated by Roland Sturm. RAND)
Recent data point to a leveling-off in childhood obesity rates

Data from: CDC/NCHS, NHES and NHANES; JAMA May 28, 2008
But a SES gradient does exist – if you look for it and may not have leveled off

Obesity and Lifestyle Habits Study, U of M

Time trends for boys (grade 10) by race and SES (BMI ≥ 85%)

Source: Delva, Johnston, O’Malley, Obesity and Lifestyle Habits Among American Adolescents: YES Paper 6. Parental education <12y (low SES); 12-16y (Mid SES); >16y for both parents (High SES)
Time trends for girls (grade 10) by race and SES (BMI $\geq 85\%$)

Source: Delva, Johnston, O’Malley. Obesity and Lifestyle Habits Among American Adolescents: YES Paper 6. Parental education <12y (low SES); 12-16y (Mid SES); >16y for both parents (High SES)

Can SES differences be revealed using spatial analyses?
A link between incomes, poverty and obesity does exist (BRFSS data)

Obesity and incomes 2001

Obesity and poverty 2006

BRFSS (2001; 2006) data from the CDC; Estimated state median incomes for 4 person families (2001/2004); Poverty rates 2006 from Bureau of the Census

Poverty in CA Assembly Districts

Data Source: UCLA Center for Health Policy Research
Diabetes deaths in CA Assembly Districts

Deaths per 100,000 adults

Poverty and adult obesity
Assembly District level data

R² = 0.4669

Data source: UCLA Center for Health Policy Research
Poverty and adult obesity

United States

California counties

Is there an SES gradient in the European Union?

Data Source: BRFSS; United States Census/American Community Survey/F
Prevalence of obesity by income and education in the US
(CDC/NHCS data for 2002 cited in Drewnowski & Specter, 2004)

Prevalence of obesity by SES and education in the European Union
(Data from Martinez et al. 1999 PHN and Roskam & Kunst 2007)

Martinez et al. 1999
Prevalence of obesity by SES and education in the UK

What about time trends in the European Union?
Trends in obesity by SES and education in France
(Data from INSEE 2007)

Trends in obesity by SES and education in France
(Data from Obepi, calculated by Nicole Darmon)
Conclusion:

A gradient does exist – lower income groups are getting fatter

Why is that?

BRFSS data for Washington State include the respondent’s zip code

Demographic data from the US Census geospatial data archive
How about using BRFSS data in a novel way

Obesity and diabetes deaths by zip code (BRFSS data/PH-SKC stats)
Seven-fold disparities in local diabetes-related mortality rates

Data from WA State death certificates
Courtesy of PH-SKC, Tacoma/Pierce Co Health Dept; Snohomish Health District

What about physical access to healthy foods?
Density of grocery stores in Seattle-King County, WA

Legend

Kernel Density of Grocery Stores

Data source: Washington State Geospatial Archive, Corporate Websites and United States Census Bureau

Density of convenience stores in Seattle-King County, WA

Legend

Number of Conv Stores Per Mile

Data source: Washington State Geospatial Archive
Density of fast food outlets in Seattle-King County, WA

Legend

Fewer Starbucks more fast foods in South County

Data source: Washington State Geospatial Archive
Healthier diets cost more and are consumed by more affluent people who have better access to resources.

Incomes and education predict diet quality
(USDA/CNPP data cited in Drewnowski & Specter, 2004)

The USDA Healthy Eating Index (HEI) is a measure of diet quality.
Low education = less physical activity
(CDC/NHCS data 2001)

Who eats 5-a-day in WA State?

Fruits and Vegetables (BRFSS, 2003)
These next questions are about the foods you usually eat or drink. Include all foods you eat, both at home and away from home.

7.1 How often do you drink fruit juices such as orange, grapefruit, or tomato?
7.2 Not counting juice, how often do you eat fruit?
7.3 How often do you eat green salad?
7.4 How often do you eat potatoes not including French fries, fried potatoes, or potato chips?
7.5 How often do you eat carrots?
7.6 Not counting carrots, potatoes, or salad, how many servings of vegetables do you usually eat?
5-a-day and obesity by county

Obesity rate by county (BRFSS 2003-2005)

R² = 0.3899

Obesity: biology, behavior, society – and economics

<table>
<thead>
<tr>
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<th>Nutrient-dense foods cost more</th>
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<td>Energy-dense diets cost less</td>
<td>Nutrient-dense diets cost more</td>
</tr>
<tr>
<td>ED foods are readily available</td>
<td>ND foods are scarce</td>
</tr>
<tr>
<td>Poor people eat cheaper diets</td>
<td>Rich people eat more costly diets</td>
</tr>
<tr>
<td>Poor people exercise less</td>
<td>Rich people exercise more</td>
</tr>
<tr>
<td>Poor people have few resources</td>
<td>Rich people have more resources</td>
</tr>
<tr>
<td>Poor people are obese</td>
<td>Rich people are thin</td>
</tr>
</tbody>
</table>

Is *inequality* fattening?
Obesity – a toxic consequence of economic environment

- Inequality is fattening
- People will get thinner only when they have things that are worth staying thin for - self-esteem, social status and jobs


- The obesity problem can be resolved only by addressing social determinants of health
- Affordable healthier diets are one place to start

For more see: www.cphn.org