

Cardiovascular Disease: how did it become such a problem, what are the risk factors with particular emphasis on diabetes and obesity, and how public policy work can to improve the health of all

Ira S. Ockene, M.D.

*David and Barbara Milliken Professor of Preventive Cardiology
University of Massachusetts Medical School*

- What is atherosclerosis, and how did it become such a problem?
- What are the risk factors for cardiovascular disease? How many are changeable?
- What are our human design parameters? What kind of life were we meant to live?
- What is the role of the built environment and the food supply in obesity?
- How is diabetes related to obesity, and why is diabetes so prevalent in certain ethnic groups?
- Cardiovascular disease deaths have decreased over the last 30 years – why?
- What has public policy done to contribute to this favorable trend, and what can we do to accelerate favorable change?

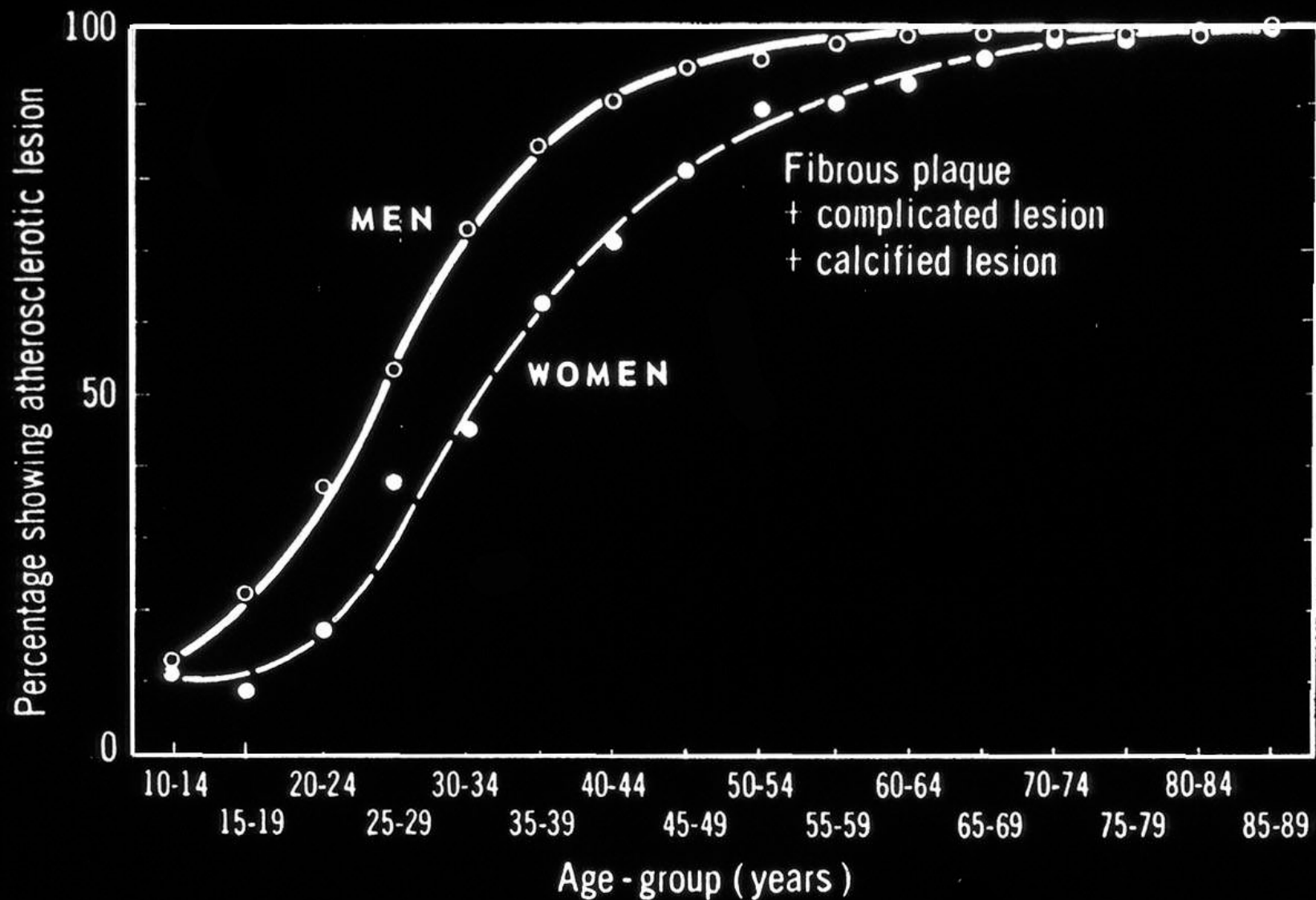


FIG. 1. Prevalence of atherosclerotic lesions in left anterior descending coronary artery among 17,955 autopsy specimens examined in a WHO collaborative study in Czechoslovakia, Sweden, and USSR. (Data from Fejfar, ref. 1.)

Coronary Disease Among U.S. Soldiers Killed in Korea

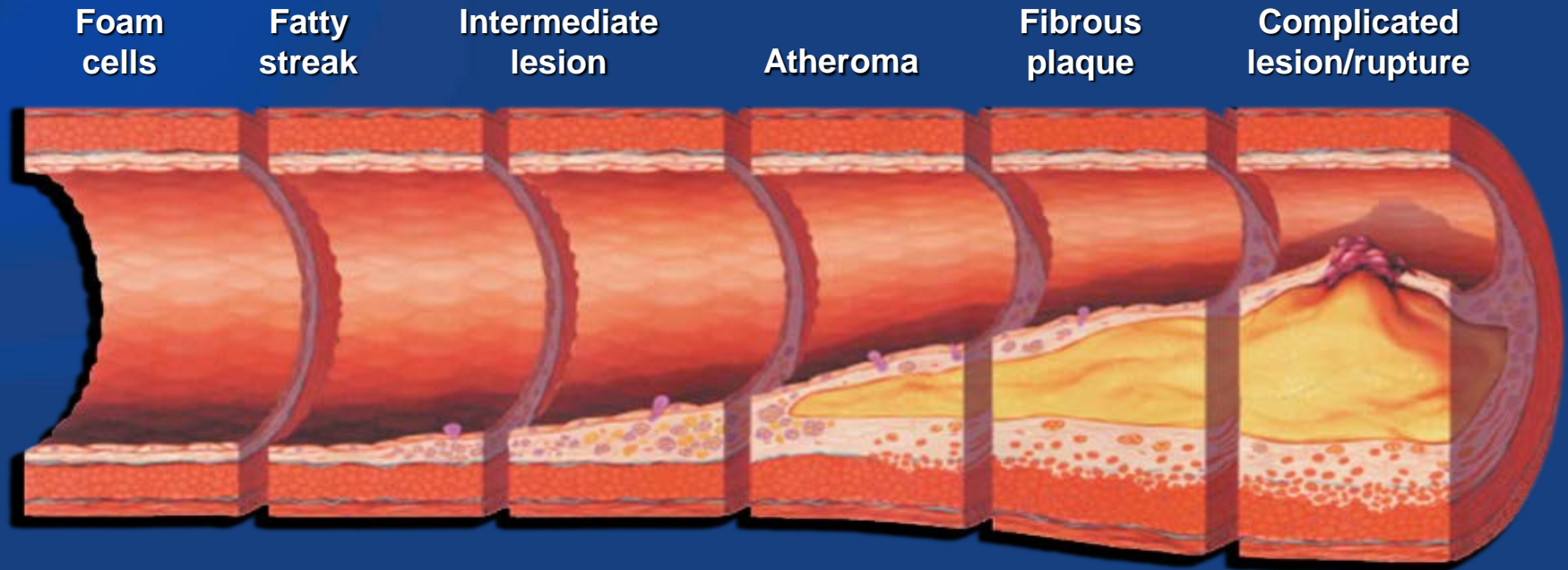
300 autopsies

Average age - 22

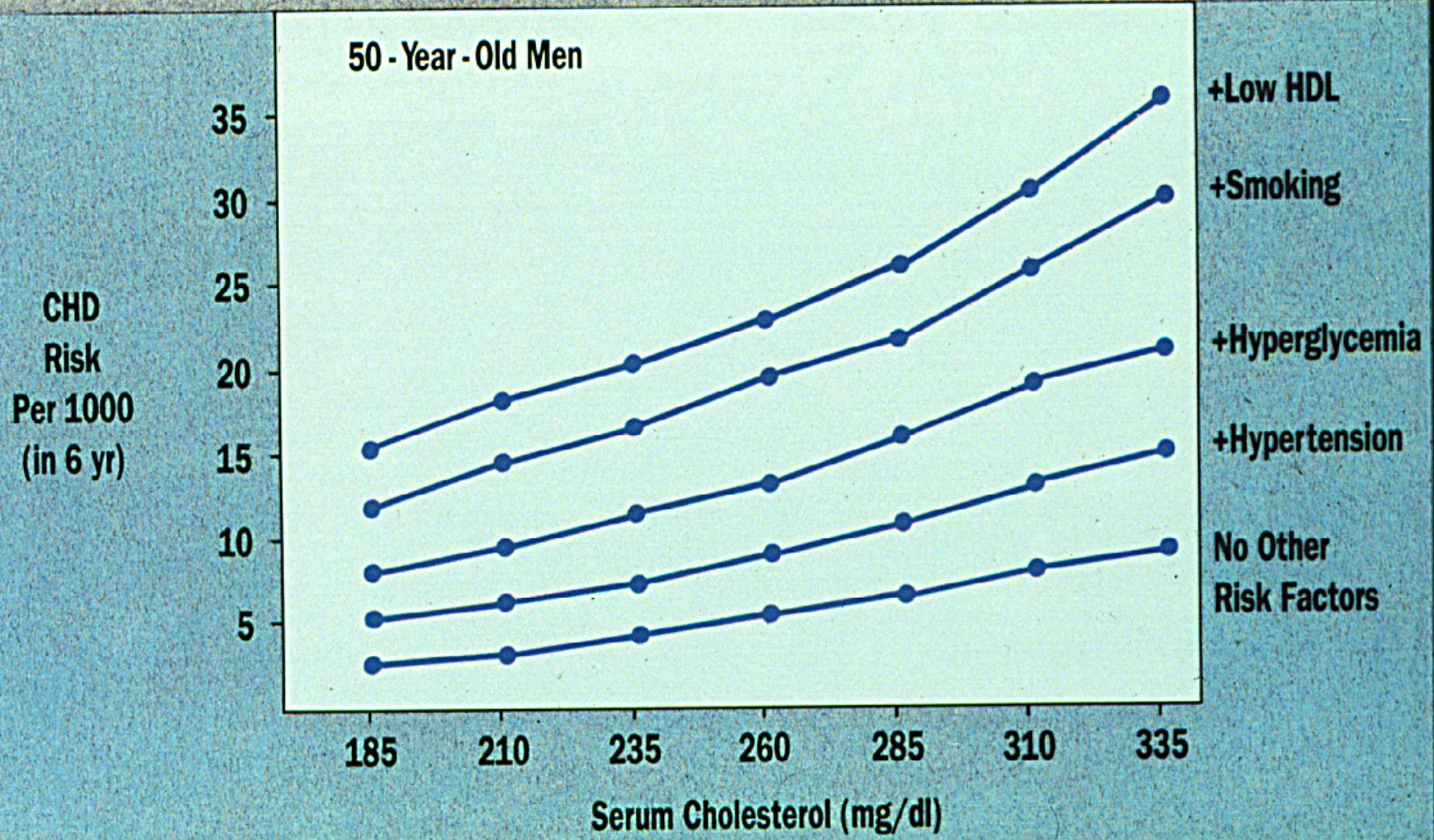
Some coronary abnormality	77.3%
---------------------------	-------

Stenosis 50% or greater	15.3%
-------------------------	-------

Atherosclerosis: Roles of Inflammation and Endothelial Dysfunction

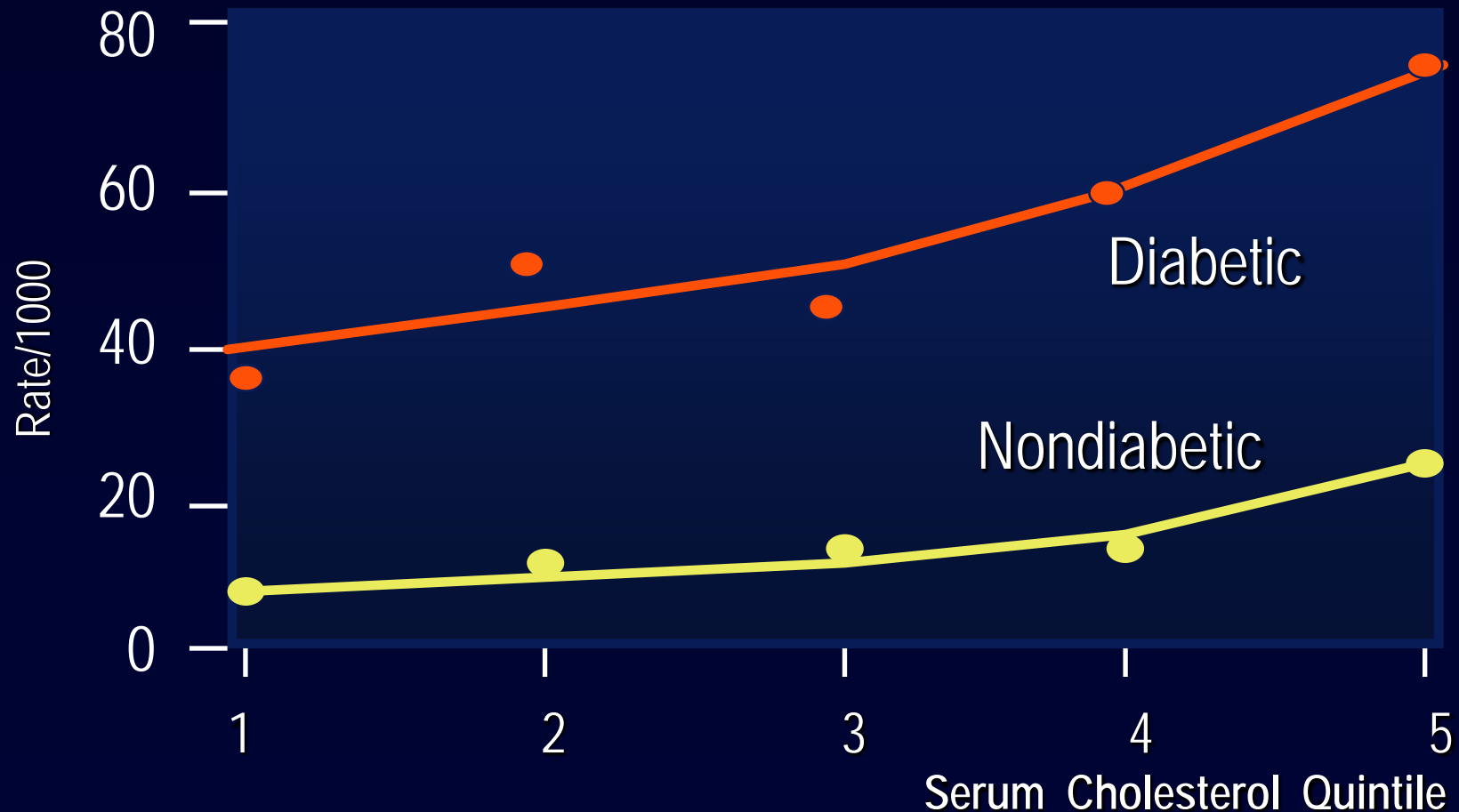


Adapted from Pepine C, et al. *Am J Cardiol.* 1998;82(suppl 10A):23S-27S.



Cholesterol Predicts CHD Mortality Rate in Diabetic and Nondiabetic Men

Multiple Risk Factor Intervention Trial (MRFIT)



Paleolithic and current U.S. nutrient intake

Nutrient	Paleolithic	U.S. RDA	Current U.S.
Energy (kcal/d)	3000	2200-2900	1750-2500
Iron (mg/d)	87.4	10-18	10-11
Calcium (mg/d)	1956	800-1200	750
Sodium (mg/d)	768	500-2400	4000
Potassium (mg/d)	10500	3500	2500
Fiber (g/d)	104	20-30	10-20
Folate (mg/d)	0.36	0.18-0.2	0.15-0.21
Ascorbate (mg/d)	604	60	77-109
Vitamin E (mg/d)	32.8	8-10	7-10

The China Study

	China	U.S.
Fat (% of calories)	14.5	38.8
Plasma cholesterol (mg/dl)	127	212
Plant protein (& of total protein)	89	30
Dietary fiber (g/day)	33.3	11.1
BMI (wt/ht ²)	20.5	25.8
Energy intake (kcal)	2641	2360
Energy intake (kcal/kg)	40.6	30.6



科教兴国振兴中华

BOTAI 博泰集团 北京亚视广告公司

65 华桥村内 东海中心1层

建国门店 65671918 订餐

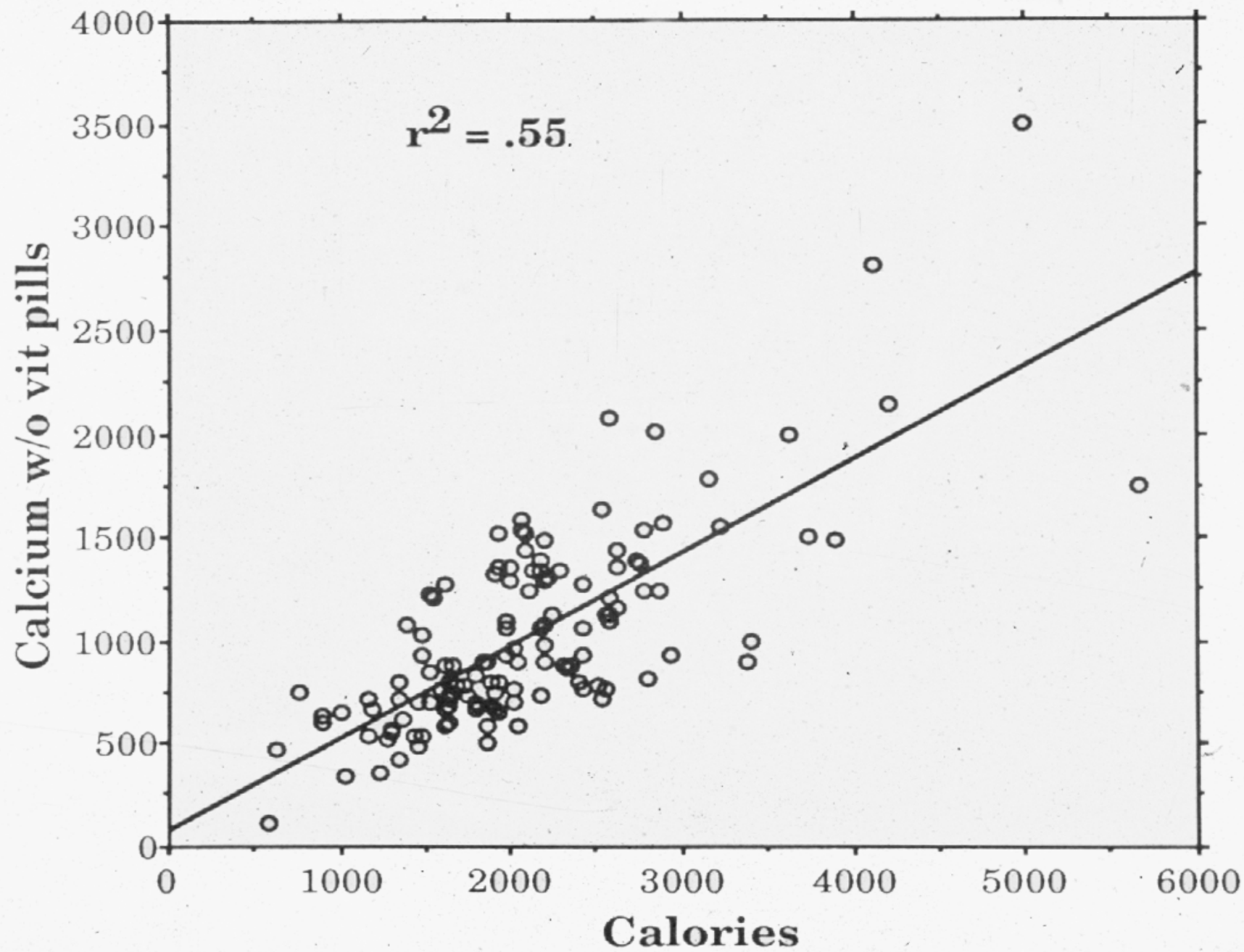
Mr. Pizza
米斯特比萨

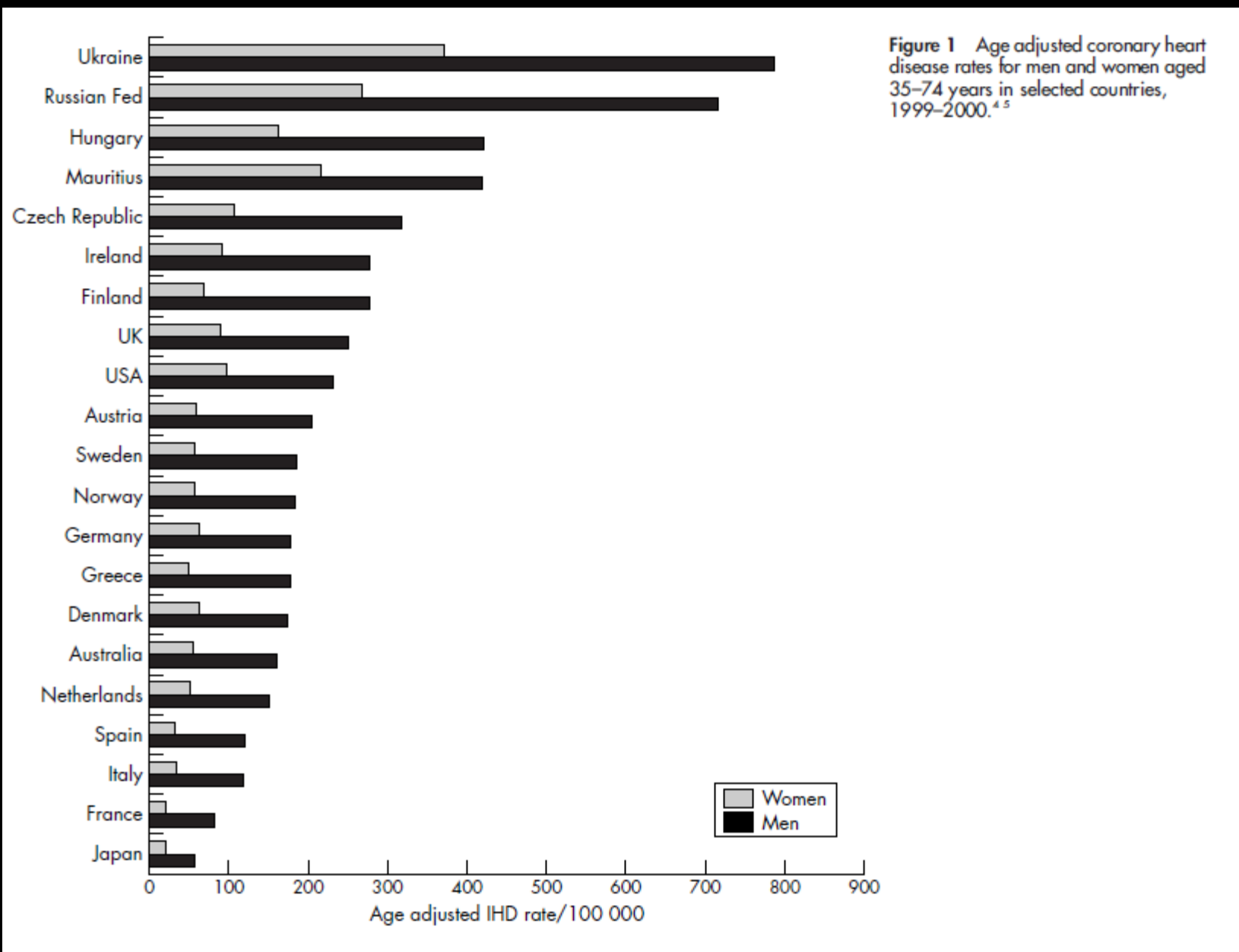
耐做的
软的
爽口的
米斯特比萨

长富宫东翼 东海中心1层

订餐电话 85157997







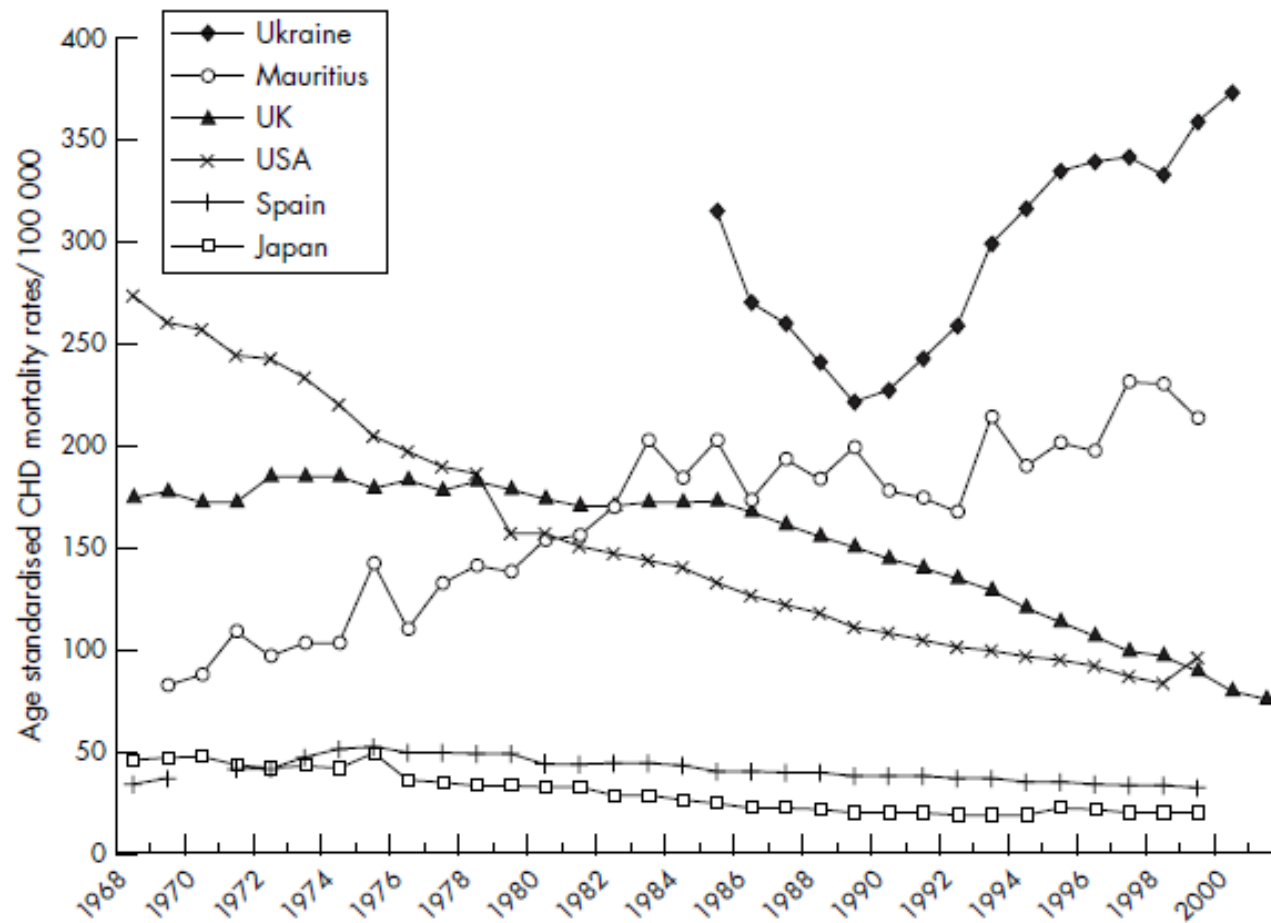
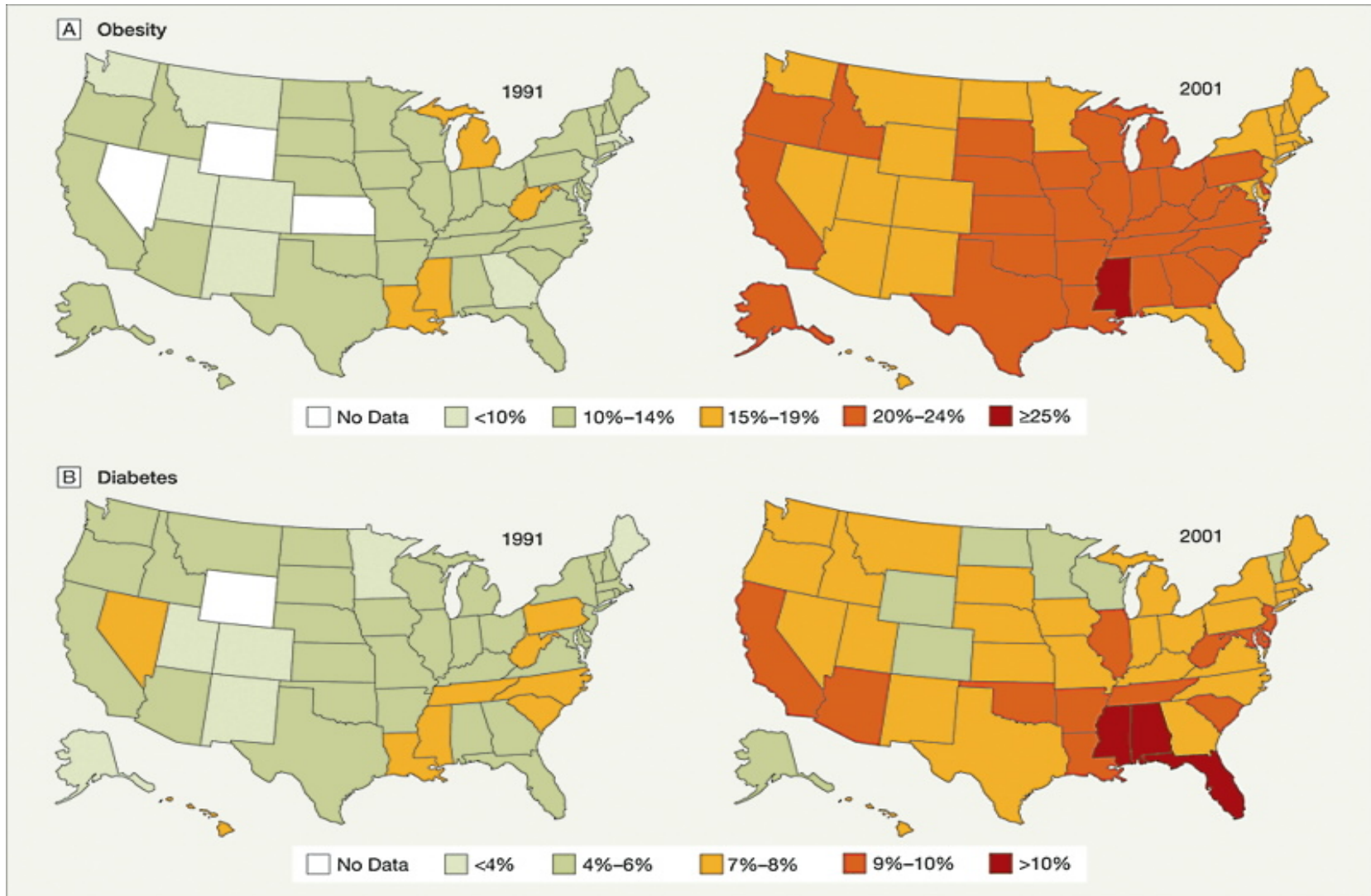


Figure 2 Trends in age adjusted coronary heart disease mortality rates for men and women aged 35–74 years in selected countries, 1968–2001.^{4,5}



Prevalence of Obesity and Diagnosed Diabetes Among US Adults, 1991 and 2001
 Source: Mokdad: JAMA, Volume 289(1).January 1, 2003.76–79

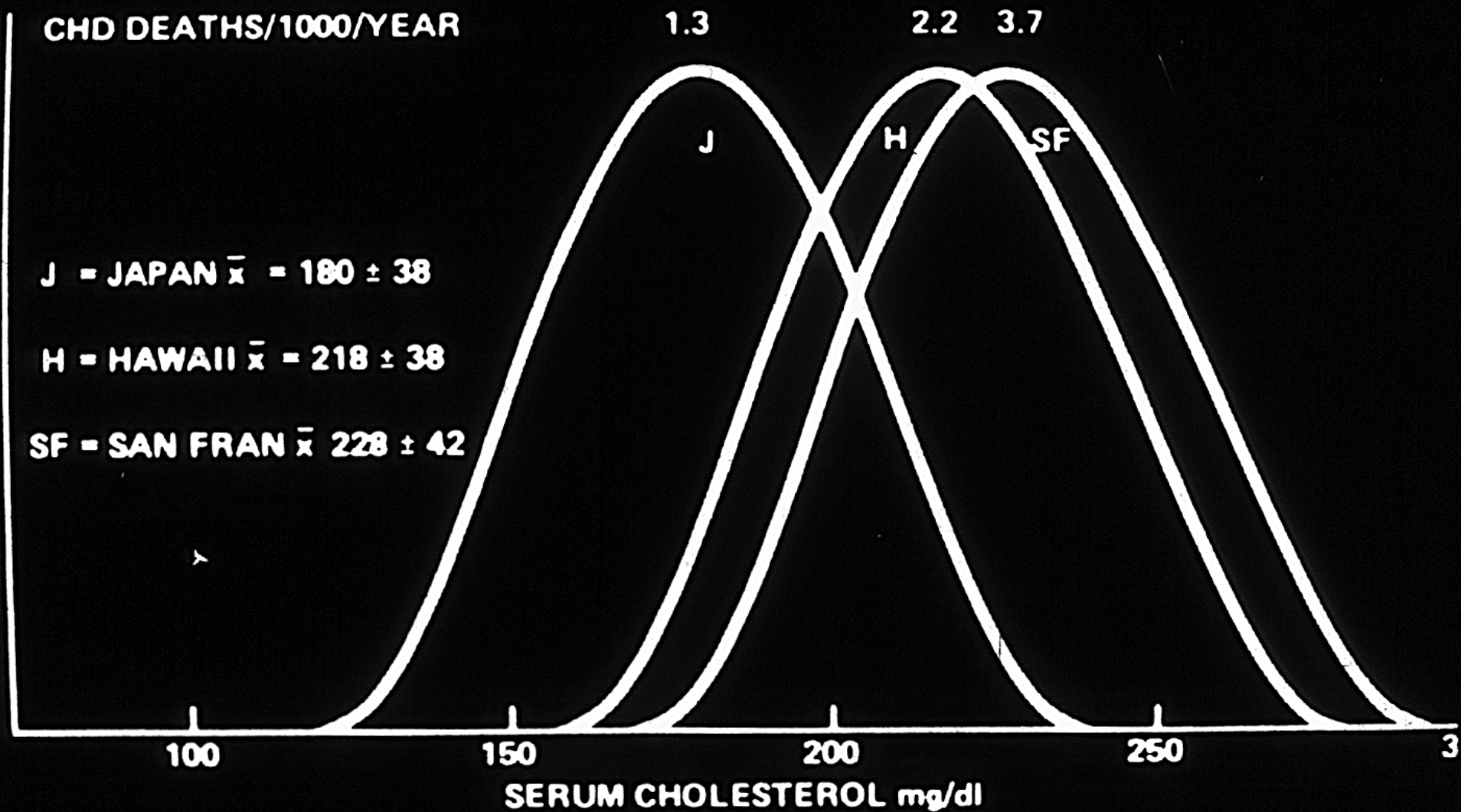
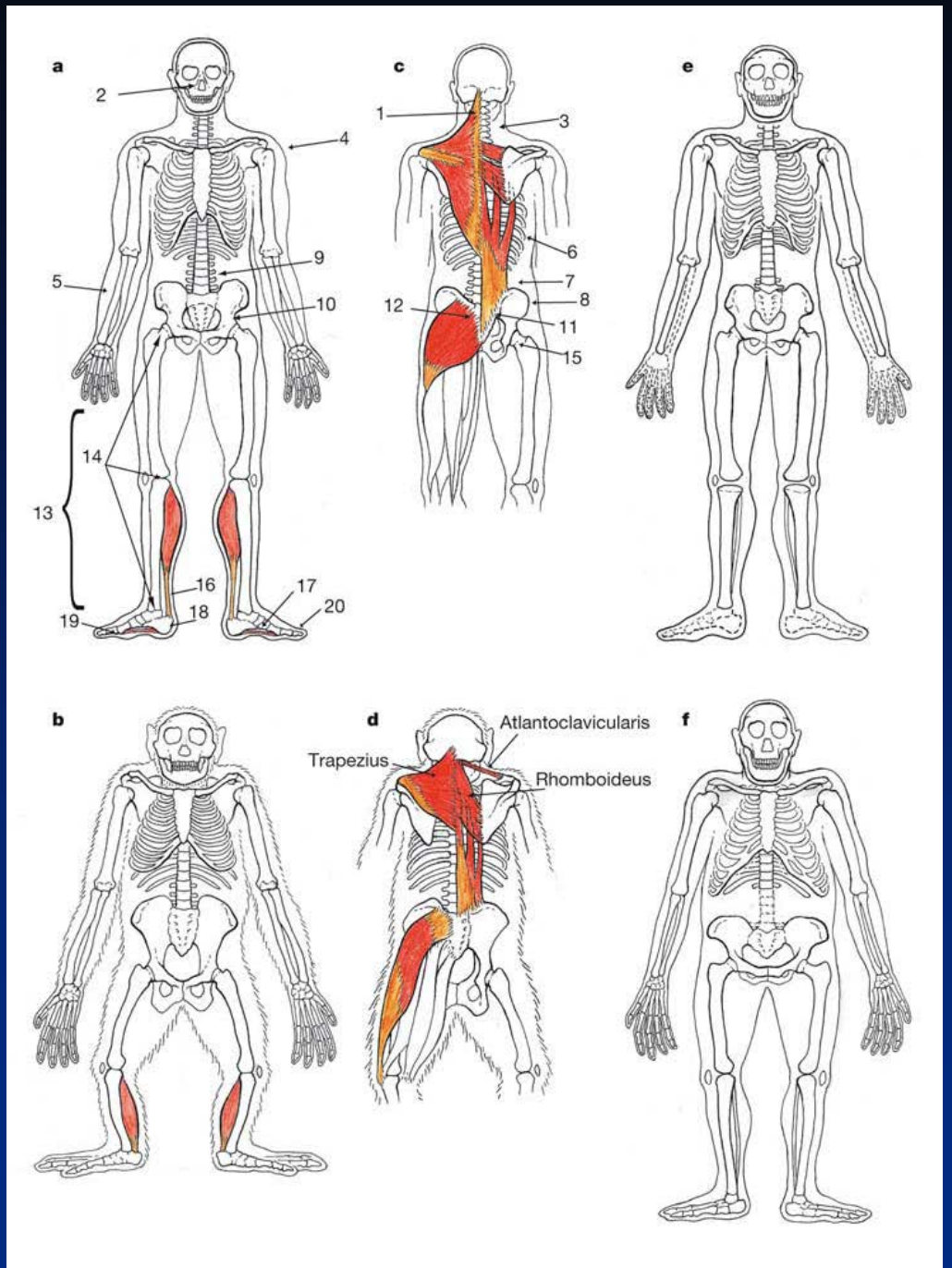


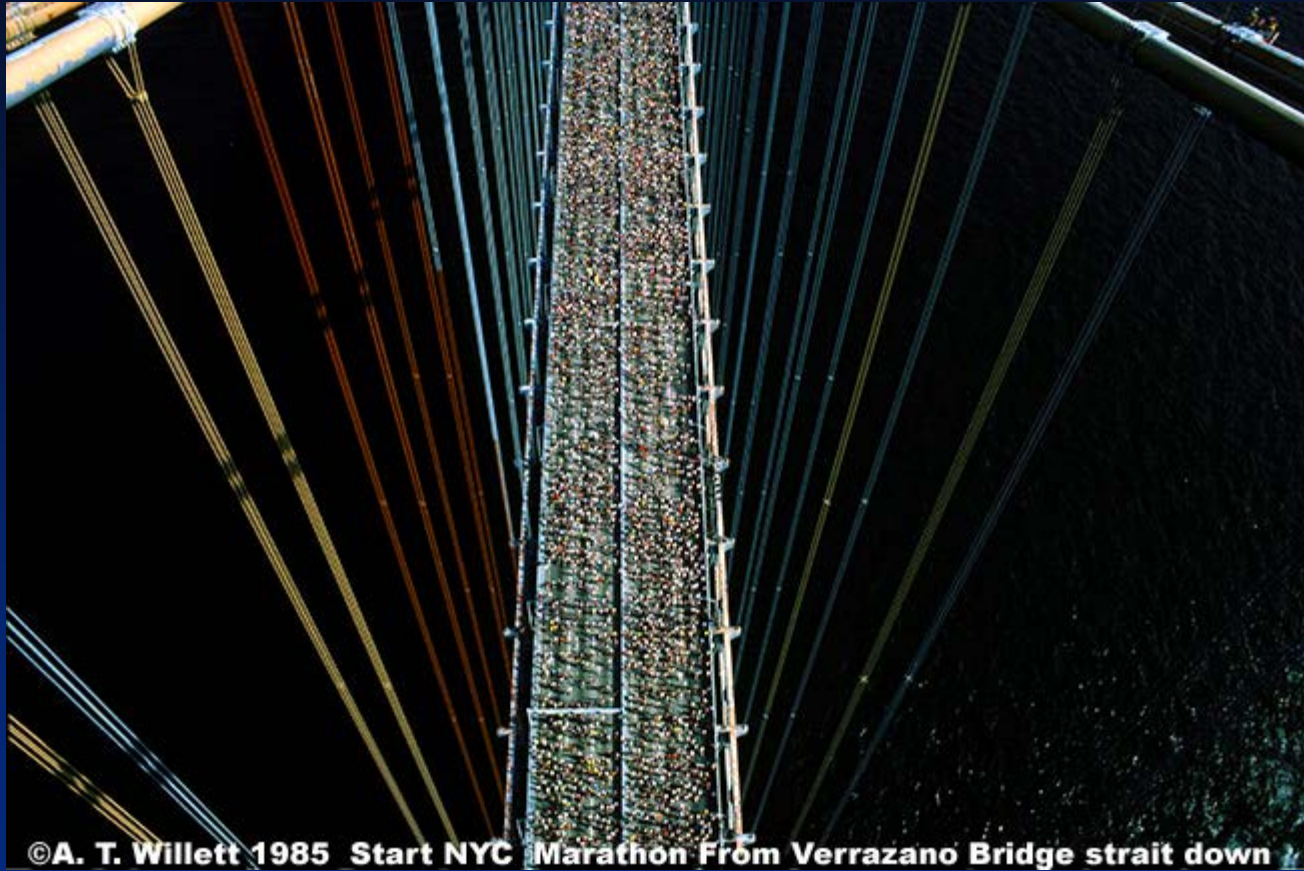
FIG. 1-13. Ni-Hon-San Study. Age-adjusted total serum cholesterol distribution (mg/dl) in three populations. Note that as individuals of Japanese heritage move closer to or become acclimated in a Western culture, their serum total cholesterol levels and incidence of coronary heart disease increase. (From Blackburn, 1979, with permission.)

Endurance running and the evolution of Homo

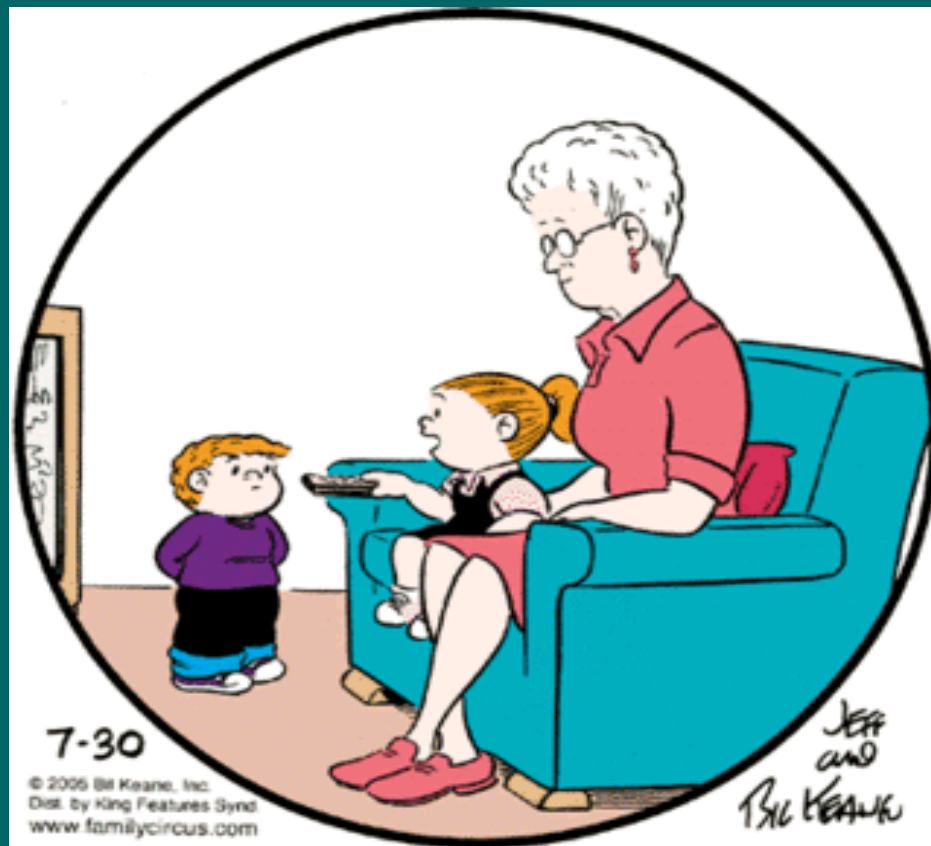
Bramble & Lieberman,
Nature 2004:432;345-352

Long distance running is rare in the mammalian world – wolves and related dogs; horses; wildebeest; and humans





©A. T. Willett 1985 Start NYC Marathon From Verrazano Bridge strait down



7-30

© 2006 Bill Keane, Inc.
Dist. by King Features Synd.
www.familycircus.com

JEFF
AND
BILL KEANE

“When Grandma was young, she had to walk all the way to the TV to change the channels.”

Women, Diabetes, and CHD

- Diabetic women are at high risk for CHD
- Diabetes eliminates relative cardioprotective effect of being premenopausal
 - risk of recurrent MI in diabetic women is three times that of nondiabetic women
- Age-adjusted mean time to recurrent MI or fatal CHD event is 5.1 yr for diabetic women vs 8.1 yr for nondiabetic women

Genetics loads the cannon, but obesity
pulls the trigger

Joslin

LLDPP Aim:

To implement and evaluate a diabetes prevention program for Latinos at high risk of developing diabetes in Lawrence, MA



U
M
A
S

Lawrence Latino
Diabetes
Prevention
Project

LLDPP Goals:

Weight loss (>7% of body weight)

Increase activity by 4000 steps/day or 1 hour/day

155
**LAWRENCE
SENIOR CENTER**



The Eagle-Tribune
on
ston.





¡GRACIAS!

LLDPP – Changes baseline to One Year

	Control (142)	Intervention (148)	P-value
BMI	0.11	-0.40	0.0038*
weight (lbs)	0.63	-2.5	0.0038
HgbA1C	-0.04	-0.10	0.009
HOMA-IR	0.06	-0.38	0.031
SBP	0.78	0.14	0.657
DBP	-0.32	-0.20	0.887
TC	3.81	0.90	0.519
TG	2.70	-0.16	0.772
HDL	0.36	1.21	0.344
LDL	3.05	-0.28	0.403
Blood Glucose	-1.5	0.5	0.56

*Highlighted fields all significant by rank sum test – corrects for skewed or kurtotic distributions, or outliers)



①
GOOD
FOR YOU
BUT
TASTES
BAD

②
BAD
FOR YOU
BUT
TASTES
GOOD

③
MAKES
YOU
FAT
AND
UGLY

④
EAT
IT
AND
DIE

"...WE'VE JUST UPDATED THE FOUR BASIC FOOD GROUPS..."

3 OUNCE MEAT SERVING

BEEF TENDERLOIN



1 oz. beef tenderloin
1/2 cup roasted vegetables
1 slice bread



- **What can legislators do?**

- You cannot take walks if the streets are not safe.
- You cannot think of the future if you have a difficult life in the present.
- You cannot eat well if food in your neighborhood comes largely from convenience stores.
- It is easier to avoid smoking if the environment is smoke-free.
- It is easier to eat well if foods are made healthier in ways that are invisible – no trans fats; healthier vegetable oils used in fryolators, olive or canola oil replacing butter.



Any questions?

