

PLACES Designing and Building for Health, Well-being, and Sustainability



We Are What We Eat, and... We Are What We Build!





RICHARD J. JACKSON WITH STACY SINCLAIR

Richard Joseph Jackson MD MPH FAAP dickjackson@ph.ucla.edu

DESIGNING HEALTHY COMMUNITIES The 2012 PBS 4-Part Series

Dr. Richard Jackson, former head of Environmental Public Health for the Centers for Disease Control, explains the link between health and the way our communities – especially our suburbs – are designed. Obesity, asthma, diabetes and heart disease are aggravated by the auto-centric way we live today. It's no secret that today's young people are likely to have shorter lives than their parents due to

unhealthy lifestyles. It doesn't have to be this way. Well-designed communities can improve both physical and mental health.





MDC OUR MEDIA BUILDS COMMUNITIES





Special Offer, courtesy of the Fund for the Environment & Urban Life:

Purchase the Complete Designing Healthy Communities Series (4 DVDs, 1 hour each, plus 4 bonus videos) to share with colleagues. Normally \$99, the series is available at \$20.

For this special offer, visit: www.DesigningHealthyCommunities.org/oram Limited supply available at discount. S6 s/h added.

http://designinghealthycommunities.org/oram/



Keehan et al: *Health Affairs* March/April 2008 27: 145-155

Male Life Expectancy



US Life Expectancy is #49 Worldwide – CIA Chartbook

"...of the 30 years of increased life expectancy 1890 -1990...
5 years can be attributed to medical care."

The rest has come from:
Infrastructure (including housing)
Public Health (esp. immunization)

Bunker cited in Prescription for a Healthy Nation Farley and Cohn 2004

• And these disorders are being shaped by the Built Environment – how we build our homes, workplaces, towns, cities and world



(Resalt **Cause and Number of Deaths** R A Other Adults N 1-3 4-7 8-15 Under 1 16-20 21-24 65 +K 25-34 35-44 45-64 Perinatal Congenital **MV Traffic MV Traffic MV Traffic MV Traffic MV Traffic** Malignant Malignant 1 Period Anomalies Crashes Crashes Crashes Crashes Crashes Neoplasms Neoplasm Congenital **MV Traffic** Malignant Homicide Suicide Malignant Homicide Heart 2 Anomalies Crashes Neoplasms Neoplasms Disease Heart Accidental Congenital Suicide Suicide Suicide Homicide 3 Disease Drowning Anomalies Accidental Homicide Homicide Accidental Homicide Malignant 4 Drowning Neoplasms Poisoning Septicemia Malignant Exposure to Congenital Accidental 5 Poisoni Neoplasms Smoke/Fire Anomalies For every age group Influenza/ Exposure to Homicide Accidental 6 Smoke/Fire Pneumonia Drowning from 3 through 33---Nephritis/ Heart 7 crashes were the No. 1 Nephrosis Disease HIANT. **MV Traffic** 8 cause of death Crashes



Pedestrian Fatality Rates for Collisions at Different Speeds



Zegeer et al 2002

Clean Air Is Important

Asthma Study in 12 Southern California High Schools

- 3535 children with no history of asthma in 6 high and 6 low air pollution high schools
- 5 years later: 265 developed asthma.
 High ozone high schools:
 - asthma rate was 3.3x higher in children playing three or more sports.
 - Low ozone high schools:
 - sports had no effect on asthma rates

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



No Data	<10%	10%–14%	15%–19%	D
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Obesity Trends* Among U.S. Adults BRFSS, 2004 (*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults BRFSS, 2009 (*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults

BRFSS, 2010

(*BMI \geq 30, or ~ 30 lbs. overweight for 5' 4" person)



- ...by 2030
 obesity rates will
 rise to 42%
- The US will need to care for ...
 32 million more obese people than in 2010.

GRTI turning knowledge into practice Site Man Contact Us About RTI Expertise RTI Newsroom Published Research Careers Working with RTI Commercialization Home Health Research » Health Economics SHARE About RTI Corporate Information RTI International - News Release - 5.7.2012 Stopping Increase in Obesity Rates Could Save Nearly \$550 Billion in Two **Business Units** Decades Office Locations Preventing obesity rates from increasing could save nearly \$550 billion in medical expenditures over the next two Events Calendar decades, according to a new study from researchers at the Centers for Disease Control and Prevention, Duke University and RTI International **RTI Fellow Program** The study, "Obesity and Severe Obesity Forecasts through 2030," appears online today in the American Journal of Preventive Medicine and was released at CDC's Weight of the Nation conference in Washington, D.C. **RTI Experts** Although the study finds that annual increases in rates of obesity are slowing, it still predicts that obesity rates will rise to 42 percent by 2030. Combined with population increases, this suggests the U.S. health care system will be burdened Awards & Honors with 32 million more obese people within two decades. F 🕒 in 🚟 🔊 The study also forecasts a more than doubling of the prevalence of individuals with severe obesity, defined as a body mass index over 40 or roughly 100 pounds overweight, to 11 percent by 2030. Severely obese individuals are most at risk for the health conditions caused by excess weight and thus have substantially greater medical expenditures and rates of absenteeism "Keeping obesity rates level could yield a savings of nearly \$550 billion in medical expenditures over the next two decades." said study author Eric Finkelstein, Ph.D., M.H.A., of Duke University. "Should these forecasts prove accurate, the adverse health and cost consequences of obesity are likely to continue to escalate without a significant intervention," said study co-author Justin Trogdon of RTI. "People need to make healthy choices, but the healthy choices must first be available and accessible in order to make them," said William H. Dietz, M.D., Ph.D., director of CDC's Division of Nutrition, Physical Activity and Obesity. "In the coming days at our Weight of the Nation conference, CDC and its partners will emphasize the proven, effective strategies and solutions that must continue to be applied to help make the healthy choice the easy choice.

Forecast:

by 2030 the prevalence of the US population with a BMI over 40 (~100 pounds overweight) will be 11%

"Supersizing" a fast-food meal – the real costs

Paying 67 cents to supersize an order — 73 percent more calories for 17 percent more money — adds an average of 36 grams of adipose tissue. The future medical costs for that bargain would be \$6.64 for an obese man and \$3.46 for an obese woman.

University of Wisconsin-Madison, Rachel N. Close and Dale A. Schoeller

Supersizing Jet Fuel Use Ave weight gain of Americans in 1990s: 10 pounds Airline distance flown in 2000 in US: 515 billion passenger-miles Weight transported 1 mile by 1 gallon of fuel: 7.3 tons (passengers or cargo) Jet fuel to transport added weight in 2000: 350 million gallons Cost of extra fuel: \$1.4 billion (Sept 20 CO₂ emissions from extra fuel: 3.8 million tons

Data sources: NCHS; US Dept. of Transportation



Relationship Between BMI and Risk of Type 2 Diabetes



Chan J et al. *Diabetes Care* 1994;17:961. Colditz G et al. *Ann Intern Med* 1995;122:481.

Percentage of US Adults with Diagnosed Diabetes - 1994



Percentage of US Adults with Diagnosed Diabetes - 2001



Percentage of US Adults with Diagnosed Diabetes - 2007



Boyle et al. Population Health Metrics 2010, 8:29 http://www.pophealthmetrics.com/content/8/1/29



POPULATION HEALTH METRICS

RESEARCH

Open Access

Projection of the year 2050 burden of diabetes in the US adult population: dynamic modeling of incidence, mortality, and prediabetes prevalence

James P Boyle¹, Theodore J Thompson^{1*}, Edward W Gregg¹, Lawrence E Barker¹, David F Williamson²

By the year 2050—21% of the US population will have diabetes

--33% if everyone receives good treatment

"[over 30 years] the percentage of new-onset type 2 diabetes in adolescence has increased from 3% to ~50% today".

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

A Clinical Trial to Maintain Glycemic Control in Youth with Type 2 Diabetes

TODAY Study Group*

ABSTRACT

BACKGROUND

Despite the increasing prevalence of type 2 diabetes in youth, there are few data to guide treatment. We compared the efficacy of three treatment regimens to achieve durable glycemic control in children and adolescents with recent-onset type 2 diabetes.

METHODS

Eligible patients 10 to 17 years of age were treated with metformin (at a dose of 1000 mg twice daily) to attain a glycated hemoglobin level of less than 8% and were randomly assigned to continued treatment with metformin alone or to metformin combined with rosiglitazone (4 mg twice a day) or a lifestyle-intervention program focusing on weight loss through eating and activity behaviors. The primary outcome was loss of glycemic control, defined as a glycated hemoglobin level of at least 8% for 6 months or sustained metabolic decompensation requiring insulin.

The members of the writing group — Phil Zeitler, M.D., Ph.D., University of Colorado Denver, Aurora; Kathryn Hirst, Ph.D., and Laura Pyle, M.S., George Washington University, Washington, DC; Barbara Linder, M.D., Ph.D., National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD; Kenneth Copeland, M.D., University of Oklahoma Health Sciences Center, Oklahoma City; Silva Arslanian, M.D., Children's Hospital of Pittsburgh, Pittsburgh; Leona Cuttler, M.D., Case Western Reserve University, Cleveland; David M. Nathan, M.D., Massachusetts General Hospital, Boston;

The NEW ENGLAND JOURNAL of MEDICINE

EDITORIAL



TODAY — A Stark Glimpse of Tomorrow

David B. Allen, M.D.

its consequences, particularly development of type tory in many participants), and the addition of 2 diabetes mellitus, is emblematic of a climate rosiglitazone to metformin improved durable glychange for modern medicine - a phenomenon cemic control, but 39% still had treatment fail-

Caloric intake that exceeds energy expended and 31% (and this weight loss was apparently transi-

... These data imply that most youth with type 2 diabetes will require multiple oral agents or insulin therapy within a few years after diagnosis.

• "Fifty years ago, children did not avoid obesity by making healthy choices; they simply lived in an environment that provided fewer calories and included more physical activity for all."

David B Allen MD New England Journal of Medicine April 29, 2012 • [We need]... economic incentives to produce and purchase healthy foods and to build safe environments that require physical movement—and not simply the prescription of more and better pills...." Dr Allen

Percentage of Trips in Urban Areas Made by Walking and Bicycling: North America and Europe 1995



Pucher J and Dijkstra L. Promoting Safe Walking and Cycling to Improve Public Health: Lessons From The Netherlands and Germany. AJPH, September 2003;93(9):1509-16.

We have changed how much we walk or bike

- Percent of children who walk or bike to school:
- 1974 → 66%
 2000 → 13%
 (CDC, 2000)





Fitness of California Children Annual Fitnessgram Results Conducted in Grades 5, 7, and 9 Measures 6 major fitness areas (e.g. aerobic capacity, body composition, flexibility)

2011 Results: Who passed all standards?

Grade 5: 25%Grade 7: 32%Grade 9: 37%

http://www.cde.ca.gov/nr/ne/yr11/yr11rel95.asp#tab1

Atlanta Population Study More Time in a Car → Higher Probability of Obesity More Walking→ Less Obesity Higher Density and Connectivity→ Lower Obesity



Obesity Relationships with Community Design, Physical Activity, and Time Spent in Cars

Lawrence D. Frank, PhD, Martin A. Andresen, MA, Thomas L. Schmid, PhD

"Keeling Curve"





What the world needs to watch

Global warming is mainly the result of CO₂ levels rising in the Earth's atmosphere. Both atmospheric CO₂ and climate change are accelerating. Climate scientists say we have years, not decades, to stabilize CO₂ and other greenhouse gases.

To help the world succeed, CO2Now.org makes it easy to see the most current CO2 level and what it means. So, use this site and keep an eye on CO2. Invite others to do the same. Then we can do more to send CO2 in the right direction.

Watch CO2 now and know the score on global warming, practically in real time.





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Executive Director, Military Advisory Board The CNA Corporation

Price Shifts 1978 to 2002

Fresh fruit and vegetables, sugars and sweets, and soft drinks



Figure 10. Relative price changes for fresh fruits and vegetables, sugars and sweets, and soft drinks, using the period 1982–84 as the baseline (index = 100), 1978–2002. Data from Food Consumption Data System, Economic Research Service, U.S. Department of Agriculture (7).

the Headlines

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

The Science Behind Today's News

🍓 Print this

Food Is Most Advertised Product on TV Viewed by Kids, Study Finds

By Michelle Strikowsky

April 17 - A new study released by the Kaiser Family Foundation found that children of all ages are being exposed to TV commercials for junk foods at an alarming rate. The study concluded that children 8 to 12 years old viewed the most food ads, an average of 21 a day or more than 7,600 per year.

The study also examined exposure among other age groups. Teens viewed approximately 17 food ads per day or over 6,000 a year, while children ages 2 to 7 saw about 12 ads a day or 4,400 a year. The study, considered the largest ever done on television advertising aimed at kids, had researchers look at and analyze ads during 1,638 hours of TV programming on such networks as ABC, NBC, CBS, F



analyze ads during 1,638 hours of TV programming on such networks as ABC, NBC, CBS, Fox, PBS, the Cartoon Network, Disney, MTV, and Nickelodeon.

Ages 2 to 7 Ages 8 to 12 viewed 4400 TV food ads per year viewed 7600 TV food ads per year

Likely Results of a Sugar Sweetened Beverage (SSB) Tax

 "A national tax of 1 cent per ounce on sugar-sweetened beverages (SSBs) would decrease consumption by 23% and raise \$14.9 billion in the first year alone."

Brownell KD, et al. The public health and economic benefits of taxing sugar-sweetened beverages. NEJM. 2009;361(16):1599-1605.

Exercise for the treatment of depression and anxiety.

"Exercise compares favorably to antidepressant medications as a first-line treatment for mild to moderate depression and has also been shown to improve depressive symptoms when used as an adjunct to medications."

International Journal of Psychiatry and Medicine. 2011;41(1):15-28. Carek, PJ et al

Gain in Longevity for a 45-Year Old Male

Years of added life



The Need for Health Impact Assessment (HIA)

• Big decisions are made without examining potential health impacts (both positive and negative) over the life cycle



Improving Health in the United States: The Role of Health Impact Assessment

September 201

Cooper River Bridge Charleston SC

• If you build a walkway on a major bridge, how many pedestrians and bicyclists will use it?



Walkway on Cooper River Bridge, Charleston SC



Marketplace is Shifting

• Today more than 56% of US home buyers want a home that is in a walkable neighborhood with as little need for driving as possible.







• The Chenoggye freeway ran through the center of Seoul ~1970-2005



• Cheonggyecheon -- 8.4 km long downtown Seoul, South Korea.

• The \$900 million project initially attracted much public criticism.

Charlotte, NC, Light Rail Opened November, 2007





Light Rail Transit Users Had

...an average reduction of 1.18 BMI points (p < 0.05) and

...an 81% reduced odds of becoming obese over time.

For a person who is 5'5" --equivalent to a weight loss of 6.45 lbs.

Accelerating Progress in Obesity Prevention Institute of Medicine Report Accelerating Progress in Obesity Prevention May 8, 2012



Goal 1: Make physical activity an integral and routine part of life.

Recommendation 1: Communities, transportation officials, community planners, health professionals, and governments should make promotion of physical activity a priority by substantially increasing access to places and opportunities for such activity. **Strategy 1-1: Enhance the physical and built environment.** Communities, organizations, community planners, and public health professionals should encourage physical activity by enhancing the physical and built environment, rethinking community design, and ensuring access to places for such activity.

Potential actions include:

 communities, urban planners, architects, developers, and public health professionals developing and implementing sustainable strategies for improving the physical environment of communities that are as large as several square miles or more or as small as a few blocks in size in ways that encourage and support physical activity; and



Photo: Carlton Reid via Flickr, Art: Peter Drew

http://www.grist.org/article/2010-08-26-when-streets-tell-the-truth-about-people-riding-in-cars-bikes/



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DESIGNING HEALTHY COMMUNITIES



RICHARD J. JACKSON WITH STACY SINCLAIR

Richard J Jackson MD MPH dickjackson@ph.ucla.edu

- "Health in all policies"
- Tax things that are unhealthy.
- Use Permitting Power
- Regulate Land Uses
- Focus on Children





- Focus on Children
- "Health in all policies"
- Tax things that are unhealthy.
- Use Permitting Power
 - -Codes, Master Plan, General Plan
- Regulate Nuisances

Active Design Guidelines
Create Solutions that Solve Multiple Problems
Health Impact Assessment
Corporations are NOT people

- Local is Good
- Make places that are as good as the places people want to visit
- Make the healthy option the default option.
- Engage the "Practice" community