Oklahoma Must Walk to Health
April 3, 2013
University of Oklahoma

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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.

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. $6 s/h added.

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To save even more, combine your discount with most current incentives.
CDC: Antidepressant use skyrockets 400% in past 20 years

By Janice Lloyd, USA TODAY

Use of antidepressant drugs has soared nearly 400% since 1988, making the medication the most frequently used by people ages 18-44, a report from the Centers for Disease Control and Prevention shows.

Eleven percent of Americans ages 12 years and older took antidepressants during the 2005-08 study period, the authors write. They add that though the majority of antidepressants were taken to treat depression, the drugs also can be used for anxiety disorders and other conditions.

The data are from the National Health and Nutrition Examination Surveys, which included information from 12,637 participants about prescription-drug use, antidepressant use, length of use, severity of depressive symptoms and contact with a health professional.

Mental-health professionals not associated with the survey cited several reasons as possible explanations for the spike:

Doctors who prescribe some popular antidepressants should monitor their patients closely for warning signs of suicide, especially when they first start the pills or change a dose.
Commuting by driving is not good for your physical, mental, and social health.

Traffic along LA freeways and Wilshire Blvd.
We Pediatricians Fear This Most In Our Own Children...
For every age group from 3 through 34—car crashes were the No. 1 cause of death
In 2009 in the US

2,953,501 million vehicle miles traveled

33,808 people died

in motor vehicle traffic crashes.

One in a million chance of death per

every 87 miles driven

• http://www-nrd.nhtsa.dot.gov/Pubs/811363.PDF
Automobile fatality rates by city, 1998
(excluding pedestrian fatalities; deaths/100,000/year)

Source: NHTSA
Number of Lives Saved per year
if National Car Fatality Rate same as:

- New York City: 24,000
- Portland: 15,000
- Atlanta: None—15,000 additional
## Average pedestrian fatality rates by city, 1996-2004

*deaths/100,000/year*

<table>
<thead>
<tr>
<th>City</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>2.29</td>
</tr>
<tr>
<td>San Francisco</td>
<td>3.43</td>
</tr>
<tr>
<td>Phoenix</td>
<td>4.06</td>
</tr>
<tr>
<td>Atlanta</td>
<td>4.91</td>
</tr>
<tr>
<td>Dallas</td>
<td>3.39</td>
</tr>
<tr>
<td>Houston</td>
<td>2.63</td>
</tr>
</tbody>
</table>

Source: Calculated from annual summary of traffic fatalities published by the National Highway Traffic Safety Administration in *Traffic Safety Facts*.

Source: FARS Analysis Reporting System, NHTSA
Pedestrian Danger Index, 2002-2003

Pedestrian Fatality Rates for Collisions at Different Speeds

Zegeer et al 2002
The Most Prevalent Chronic Disease of Childhood Is...
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 children 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
Impact of Changes in Transportation and Commuting Behaviors During the 1996 Summer Olympic Games in Atlanta on Air Quality and Childhood Asthma

Michael F. Friedman, MD
Kenneth E. Powell, MD, MPH
Lori Hiltzinger, MS
Lelfoy M. Graham, MD
W. Gerald Teague, MD

Despite advances in asthma therapy, asthma remains a substantial public health problem. In the United States, asthma is a leading cause of childhood morbidity, with an estimated prevalence of 6.0% in children and youth younger than 18 years. Numerous studies have documented a rise in the morbidity, mortality, and prevalence of asthma in different populations. The cause or causes of this trend remain controversial.

Experimental, laboratory, and epidemiologic studies in the last several years have linked high concentrations of known air pollutants to respiratory health problems, most notably exacerbations of asthma. However, opportunities to study the health effects of anthropogenic improvements in air quality are rare. One study found a decrease in particulate pollution and respiratory hospital admissions associated with the closure of an industrial facility in that community. To our knowledge, no study has examined the impact of improved ozone pollution for an extended period of time on asthma exacerbations or other markers of asthma morbidity. Also, the extent to which moderate concentrations of ozone (ie, daily peak of 50-100 ppb) during various exposure lengths affects asthma morbidity remains controversial.

Context: Vehicle exhaust is a major source of ozone and other air pollutants. Although high ground-level ozone pollution is associated with transient increases in asthma morbidity, the impact of citywide transportation changes on air quality and childhood asthma has not been studied. The alternative transportation strategy implemented during the 1996 Summer Olympic Games in Atlanta, Ga, provided such an opportunity.

Objective: To describe traffic changes in Atlanta, Ga., during the 1996 Summer Olympic Games and concomitant changes in air quality and childhood asthma events.

Design: Ecologic study comparing the 17 days of the Olympic Games (July 19-August 4, 1996) to a baseline period consisting of the 4 weeks before and 4 weeks after the Olympic Games.

Setting and Subjects: Children aged 1 to 16 years who resided in the 5 central counties of metropolitan Atlanta and whose data were captured in 1 of 4 databases.

Main Outcome Measures: Citywide acute care visits and hospitalizations for asthma (asthma events) and nonasthma events, concentrations of major air pollutants, meteorological variables, and traffic counts.

Results: During the Olympic Games, the number of asthma acute care events decreased 41.6% (4.23 vs 2.47 daily events) in the Georgia Medicaid claims file. 11.1% (1.36 vs 0.76 daily events) in a health maintenance organization database, and 10.1% (2.34 vs 1.65 daily hospitalizations) in the Georgia Hospital Discharge Database. The number of nonasthma acute care events in the 4 databases changed -1.1%, +1.3%, -2.1%, and +10%, respectively. In multivariate regression analysis, only the reduction in asthma events recorded in the Medicaid database was significant (relative risk 0.58; 95% confidence interval 0.44-0.80). Peaks in daily ozone concentrations decreased 27.5%, from 81.3 ppb during the baseline period to 58.6 ppb during the Olympic Games (P < .001). Peak weekday morning traffic counts dropped 27.5% (P < .001). Traffic counts were significantly correlated with that day’s peak ozone concentration (average r = 0.36 for all 4 roads examined). Meteorological conditions during the Olympic Games did not differ substantially from the baseline period.

Conclusions: Efforts to reduce downtown traffic congestion in Atlanta during the Olympic Games resulted in decreased traffic density, especially during the critical morning period. This was associated with a prolonged reduction in ozone pollution and significantly lower rates of childhood asthma events. These data provide support for efforts to reduce air pollution and improve health via reductions in motor vehicle traffic.

30% reduction in Driving
30% Improvement in Air Quality
Results: Acute Care Visits for Asthma
1-16 year old residents of Atlanta

* Medicaid Claims
† Kaiser HMO Pediatric ER's Hospital Admissions

Baseline Period
Olympic Period†

\( p = 0.01 \)

† July 19 –August 4, 1996
Source: Friedman, et al, JAMA, 2001
Did you Hear about Carmageddon? When the 405 Freeway in LA Was Closed for a Weekend in 2011?
'Carmaheaven': Closure of 405 in 2011 improved air quality up to 83 percent

By Alison Hewitt | September 28, 2012

Take the time to enjoy a deep breath this weekend when the 405 freeway closes for Carmageddon II. If it’s anything like last year, the air quality is about to get amazing.

In study findings announced Sept. 28, UCLA researchers report that they measured air pollutants during last year’s Carmageddon (July 15–17) and found that when 10 miles of the 405 closed, air quality near the shuttered portion improved within minutes, reaching levels 83 percent better than on comparable weekends.

Because traffic dipped all over Southern California that weekend, air quality also improved 75 percent in parts of West Los Angeles and Santa Monica and an average of 25 percent regionally — from Ventura to Yucaipa, and Long Beach to Santa Clarita.

Air Quality Change During Carmageddon
Close to the Highway Improved 83%
In West Los Angeles and Santa Monica Improved 75%
For the Region Improved 25%
“I like to play indoors better ’cause that’s where all the electrical outlets are,”

-fourth grader.
20% of Teen Age boys taking Diagnosed with Hyperactivity
Easing Brain Fatigue With a Walk in the Park

By GRETCHELEN REYNOLDS
• The Built Environment: Designing Communities to Promote Physical Activity in Children

• Policy Statement American Academy of Pediatrics

• June 2009
Oklahoma is the sixth-worst state for obesity rates, with nearly one in three residents qualifying as obese, according to new data released Monday by the Centers for Disease Control.

The rate for Oklahoma is 31.1 percent. It is one of 12 states higher than 30 percent, according to the numbers from an annual survey.

"We're not satisfied with the number," said Keith Reed, director of the center for the advancement of wellness at the Oklahoma State Department of Health. "We know that we've got a lot of work to do in Oklahoma."

It is an increase from 30.4 percent last year, but the CDC cautioned that changes in the way the survey is completed, like the addition of homes with only a cell phone, make comparisons inaccurate.

The worst state was Mississippi, with 34.9 percent. The best state was Colorado, with 20.7 percent.

It's important to look at obesity rates, because obesity often leads to other chronic conditions like diabetes and high blood pressure. Treating all of these conditions increases the overall amount spent on medical care, said John Schumann, associate professor of medicine at the University of Oklahoma School of Community Medicine.
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, 1997

(*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 ≥30, or ~ 30 lbs. overweight for 5’ 4” person)

NHANES -- Measured

NHANES – In person interview-- self-reported

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

Forecast:
- by 2030 the prevalence of the US population with a BMI over 40 (~100 pounds overweight) will be 11%
Relationship Between BMI and Risk of Type 2 Diabetes

Age-Adjusted Relative Risk

- Women
- Men

Body Mass index (kg/m²)

Percentage of US Adults with Diagnosed Diabetes - 1994
Percentage of US Adults with Diagnosed Diabetes - 2007
U.S. “Health” Care Expenditures as Percent of GDP

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

US Life Expectancy is #49 Worldwide – CIA Chartbook
"The Status of Baby Boomers’ Health in the United States: The Healthiest Generation?"

JAMA Internal Medicine
February 4, 2013
# Overall Health Status US

## Persons Aged 46-64

<table>
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<tbody>
<tr>
<td><strong>Report “excellent” health</strong></td>
<td></td>
</tr>
<tr>
<td>32%</td>
<td>13%</td>
</tr>
<tr>
<td><strong>“Functional Limitation”</strong></td>
<td></td>
</tr>
<tr>
<td>9%</td>
<td>14%</td>
</tr>
<tr>
<td><strong>Using Walking Assist (wheelchair, cane, etc)</strong></td>
<td></td>
</tr>
<tr>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Smoking</td>
<td>28%</td>
</tr>
<tr>
<td>Obesity</td>
<td>29%</td>
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</tbody>
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### “Lifestyle Factors” US
Persons Aged 46-64 (NHANES)

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>28%</td>
<td>21%</td>
</tr>
<tr>
<td>Obesity</td>
<td>29%</td>
<td>39%</td>
</tr>
<tr>
<td>No Regular Physical Activity</td>
<td>17%</td>
<td>52%</td>
</tr>
</tbody>
</table>
Nurse Study 1976-2000

Risk of Death

Lean: 1
Obese: 1.9

Risk of Death

Lean

Obese

Lean Obese
Risk of Death

Gain in Longevity for a 45-Year Old Male

Additional years of Life:
Moving from Low to Moderate Fitness -- 5.8 years
From Low to High —— 8.7 years.
“Old” Schools
Schools

• Since World War II
  –Average School Size
    • grew fivefold, from 127 to 653 students
• Number of Schools declined 70%

Credit: Constance E. Beaumant, NTHP
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
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.
Complete Streets Bring Equity to Community and Transportation

- Complete Streets
  - social equity, aesthetics, walking, improved local sales, community building
Sonoma county: General Plan -- Policies that Address Public Health Threats
A Big Shift in Public Health’s Awareness of Built Environment as a Core Determinant of Health
2011 APHA Annual Meeting

“land use” 102 matches

“built environment” 182 matches
Bicycle Rental Area Outside Union Station Washington, DC
Two Police “vehicle” parked during lunch
- Segway Personal Transporter
  - $5000 and up
  - Average ~200 kcal/hr

- Cost of Police Mountain Bike
  - $700-1000
  - Average ~ 650/kcal/hr
Charlotte, NC, Light Rail Opened
November, 2007
Interviewed People at 839 Locations years before and after Charlotte Light Rail Service Began
The Effect of Light Rail Transit on Body Mass Index and Physical Activity

John M. MacDonald, PhD, Robert J. Stokes, PhD, Deborah A. Cohen, MD, MPH, Aaron Kofner, MS, Greg K. Ridgeway, PhD

Background: The built environment can constrain or facilitate physical activity. Most studies of the health consequences of the built environment face problems of selection bias associated with confounding effects of residential choice and transportation decisions.

Purpose: To examine the cross-sectional associations between objective and perceived measures of the built environment—BMI, obesity (BMI ≥ 30 kg/m²), and meeting weekly recommended physical activity (RPA) levels through walking and vigorous exercise. To assess the effect of using light rail transit (LRT) system on BMI, obesity, and weekly RPA levels.

Methods: Data were collected on individuals before (July 2006 – February 2007) and after (March 2008 – July 2008) completion of an LRT system in Charlotte, NC. BMI, obesity, and physical activity levels were calculated for a comparison of these factors pre- and post-LRT construction. A propensity score weighting approach adjusted for differences in baseline characteristics among LRT and non-LRT users. Data were analyzed in 2009.

Results: More positive perceptions of one’s neighborhood at baseline were associated with a -0.36 (p=0.05) lower BMI; 15% lower odds (95% CI = 0.77, 0.94) of obesity; 9% higher odds (95% CI = 0.99, 1.20) of meeting weekly RPA through walking; and 11% higher odds (95% CI = 1.01, 1.22) of meeting RPA levels of vigorous exercise. The use of LRT to commute to work was associated with an average -1.18 reduction in BMI (p<0.05) and an 81% reduced odds (95% CI = 0.04, 0.92) of becoming obese over time.

Conclusions: The results of this study suggest that improving neighborhood environments and increasing the public’s use of LRT systems could provide improvements in health outcomes for millions of individuals.

• Significant increase in meeting the weekly Recommended Physical Activity

• ... through walking

• ... and through vigorous exercise
• The use of Light Rail Transit to commute to work was associated with an average reduction of 1.18 BMI points ($p<0.05$) and 81% reduced odds of becoming obese over time.

• For a person who is 5’ 5” --equivalent to a relative weight loss of 6.45 lbs.
The Need for Health Impact Assessment (HIA)

• Big decisions are made without examining potential health impacts (both positive and negative) over the life cycle.
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
• 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.
Photo: Carlton Reid via Flickr, Art: Peter Drew

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

DESIGNING
HEALTHY COMMUNITIES

RICHARD J. JACKSON WITH STACY SINCLAIR

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