

# Public Health and the Built Environment



# How Healthy Are These Places?



# How Healthy Are Our Buildings?

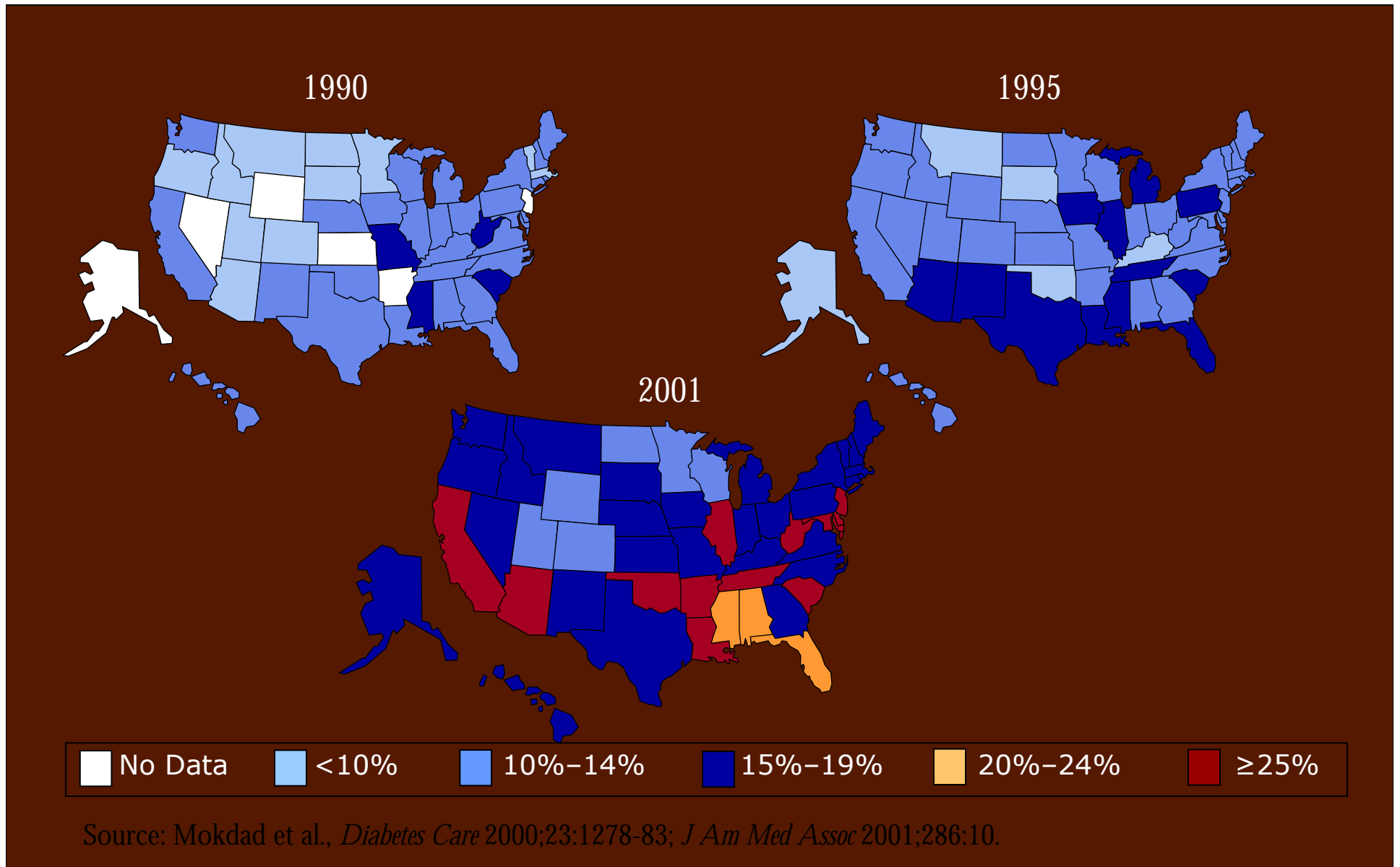


Source: CDC



# Diabetes Trends\* Among Adults in the U.S., (Includes Gestational Diabetes)

BRFSS, 1990,1995 and 2001



# Burden of Physical Inactivity

## The Problem

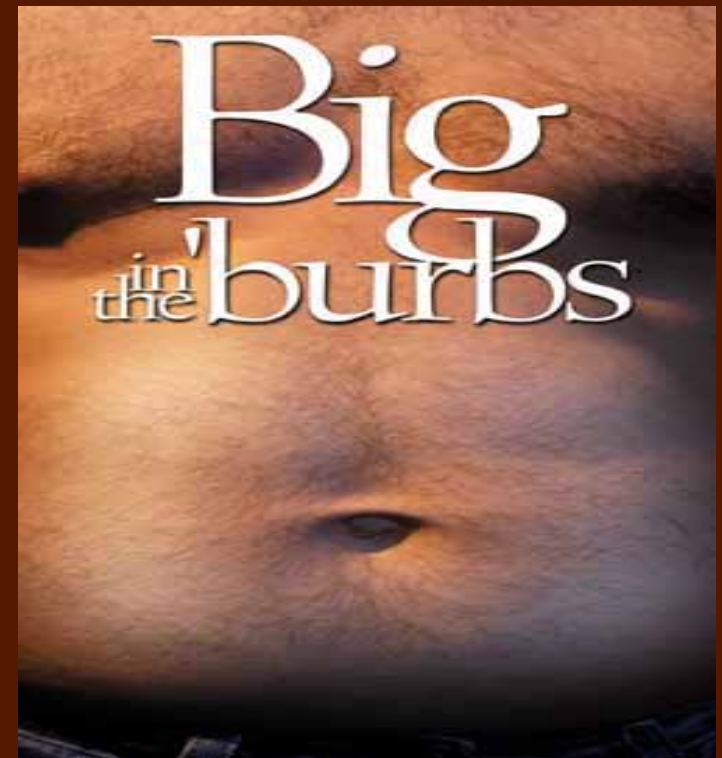
- 27% of adults are sedentary
- 50-70% do not achieve recommended physical activity

## The Public Health Burden

- 64% overweight and 1 in 3 obese
- Physical inactivity is a primary factor in over 250,000 deaths annually.

## The Economic Burden

- Medical costs associated with physical inactivity may exceed \$76 billion annually.



Data Sources: 2000 BRFSS, 2002 NHANES, Powell 1994, Pratt et. al. 2000; CDC

# Trends Among Youth

1 in 6 Youth ages 6-19 is Overweight

1 in 3 high school youth do not engage in vigorous physical activity

Less than 30% attend daily physical education

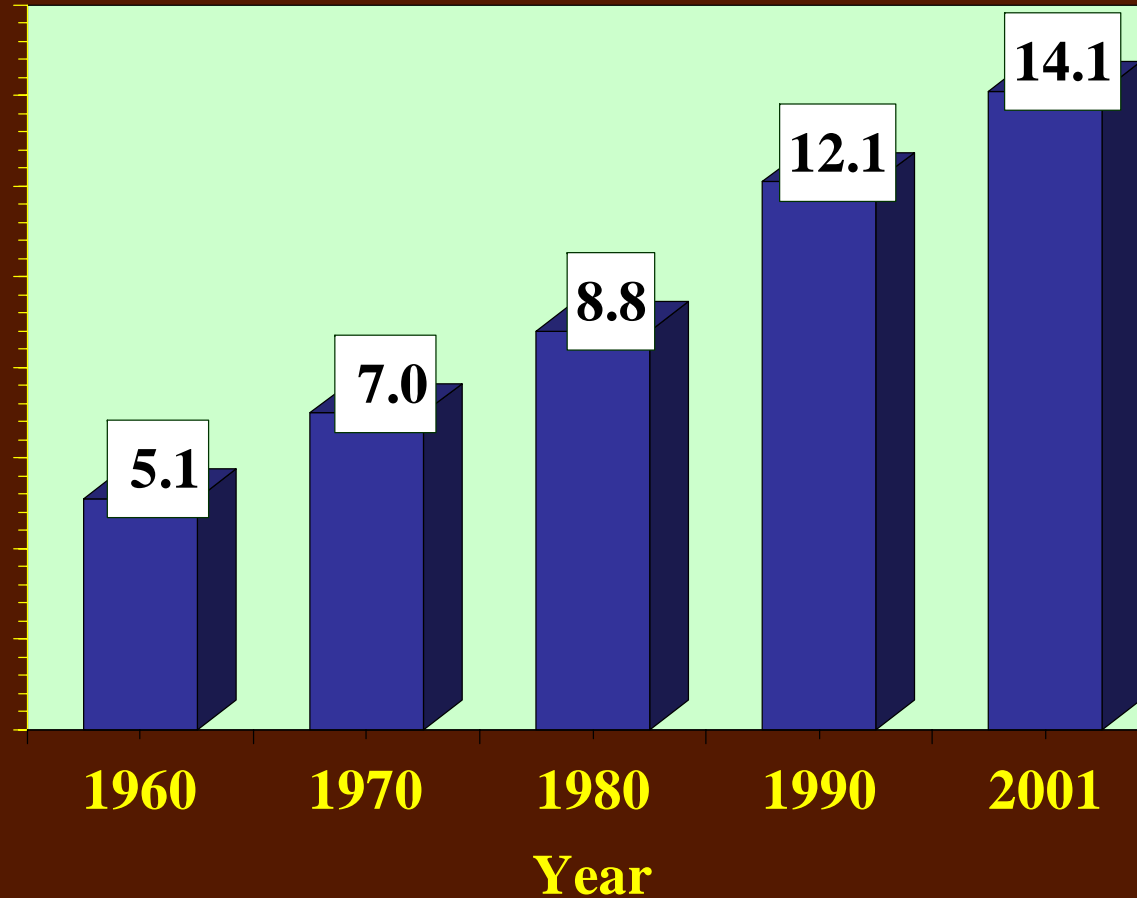
Children watch more hours of TV in a year than attend hours of school



Data Sources: 2000 YRBSS, 2000 NHANES, 2002 National TV Turnoff Week Data; CDC

# Health Care Expenditure Trends

US Health Care Expenditures as Percent of GDP  
1960 - Present



Source:  
[www.cms.hhs.gov/statistics/nhc/](http://www.cms.hhs.gov/statistics/nhc/)

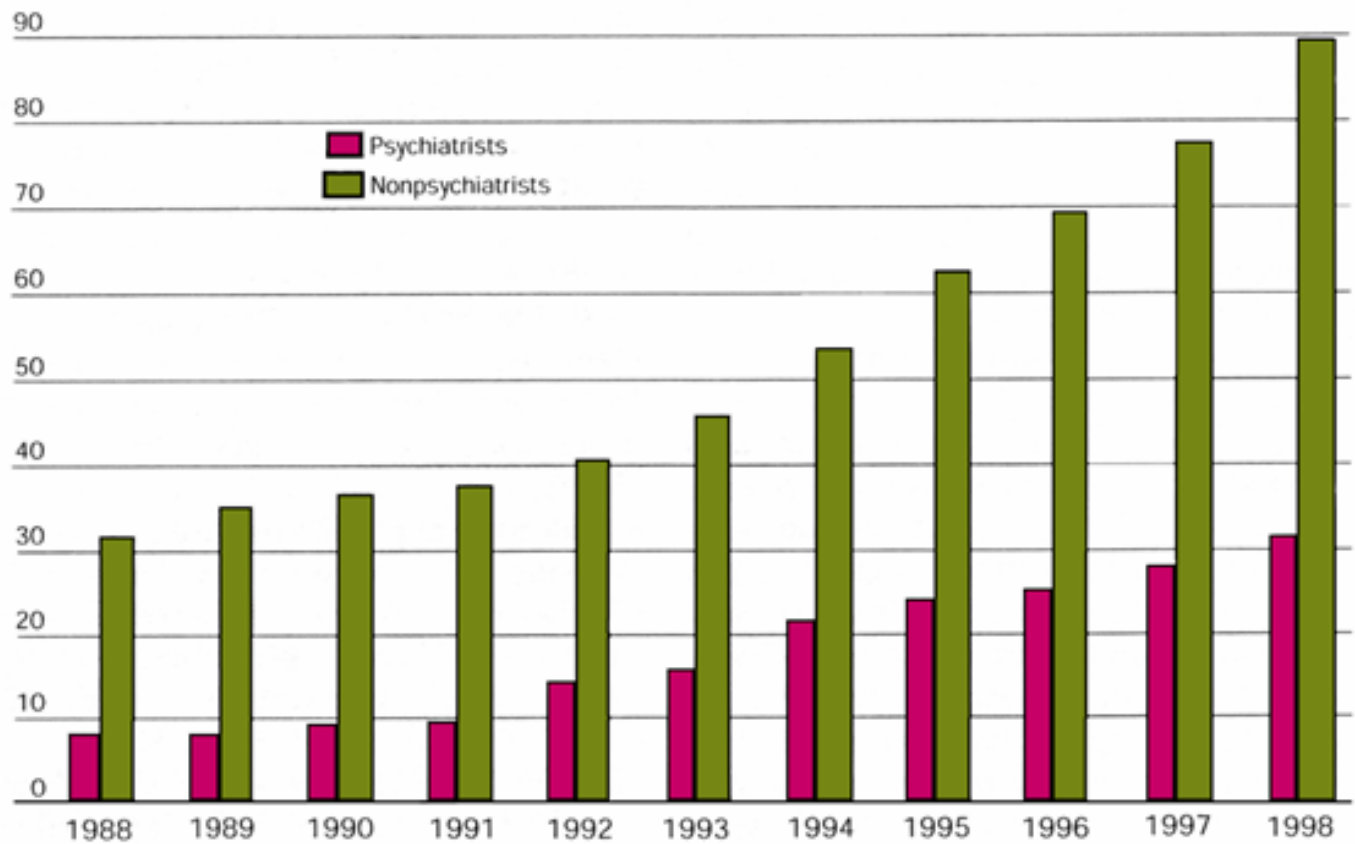
# Depression - Antidepressant Prescriptions

Depression affects 19 million American adults

Leading cause of disability in the U.S. and worldwide

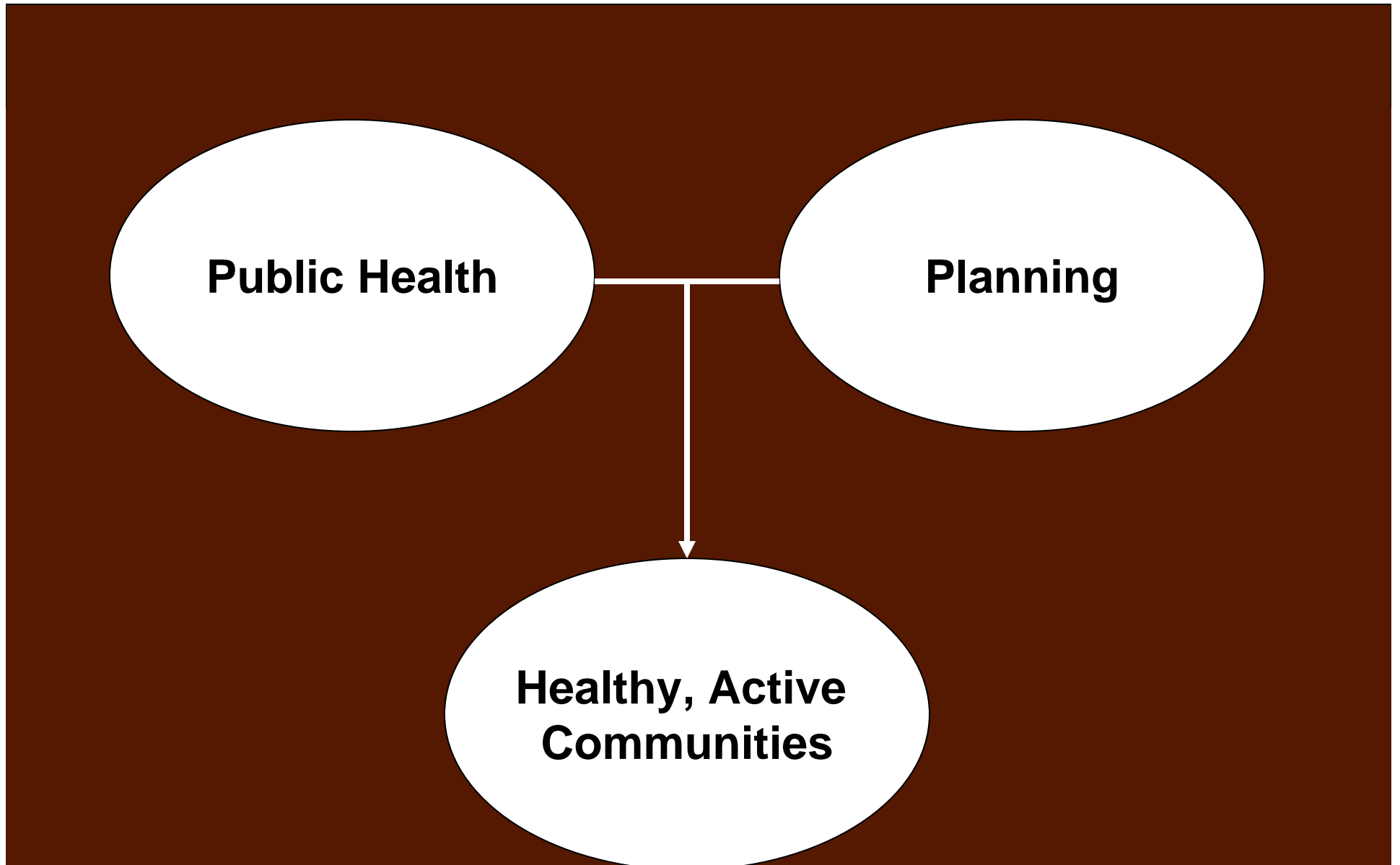
**Antidepressant Prescriptions By Physician Specialty, 1988-1998**

Millions of prescriptions



SOURCE: IMS Health, Inc.  
HEALTH AFFAIRS - Volume 19, Number 4

# Healthy Planning



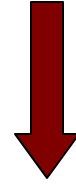
## Areas Where Impacts Exist

Physical Fitness

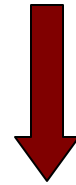
Cardiovascular and Respiratory Health

Traffic Accidents (Fatal and Non-Fatal Injuries)

# Land Use and Transportation Decisions



Travel Choices, Amount of Driving versus Walking Time



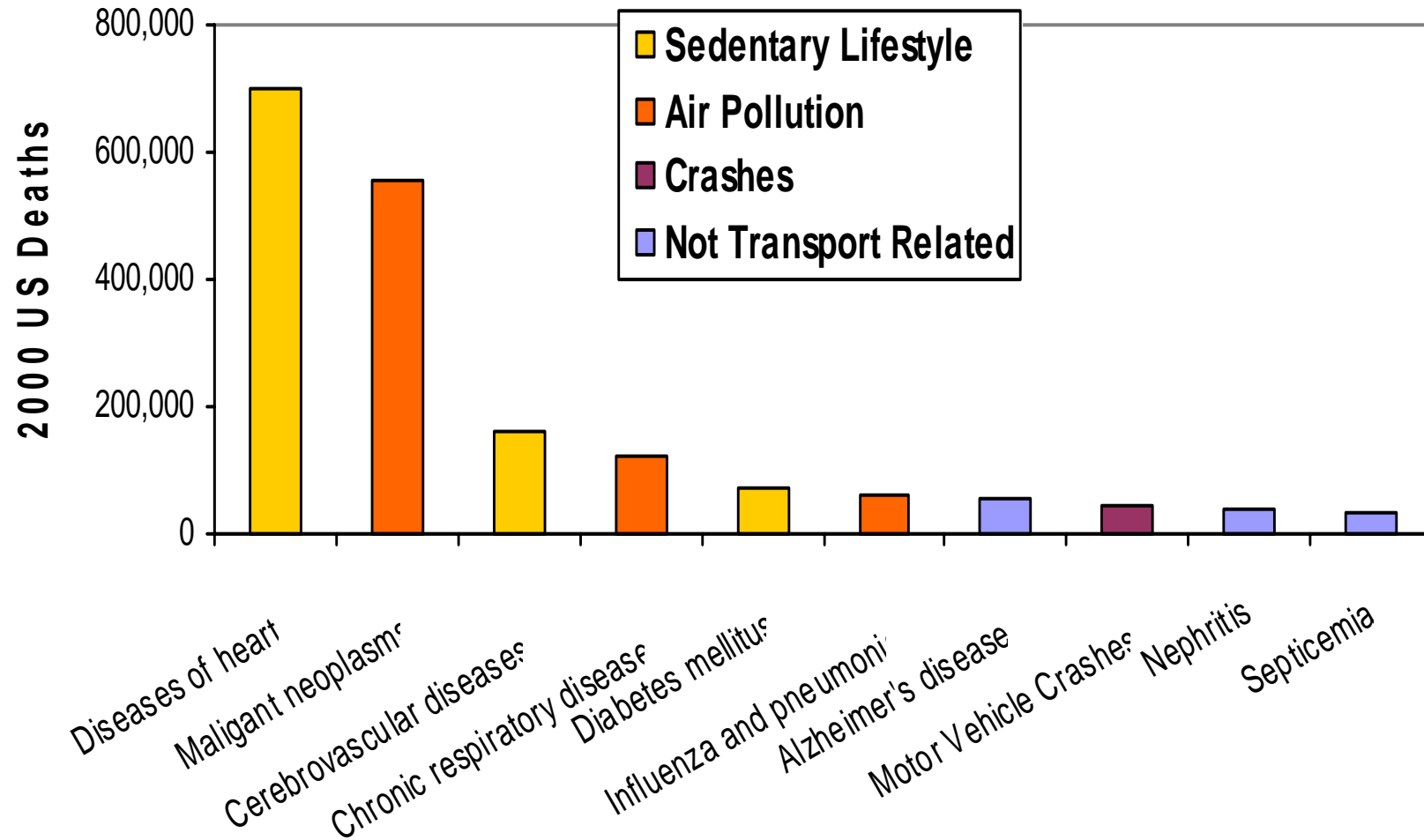
## Health Outcomes

Physical Activity  
Fatal and Non-Fatal Injuries  
Respiratory Health  
Social Connectedness  
Mental Health  
Nutrition  
Water Quality



**Its All Connected!**

# 10 Leading Causes of Death



# **a review of the literature**



# Physical Activity

Lack of Physical Activity Major Contributor to:

- Obesity
- Hypertension
- Cardiovascular and Respiratory Health
- Diabetes

Health is affected by behavior; behavior by environment



# Physical Activity

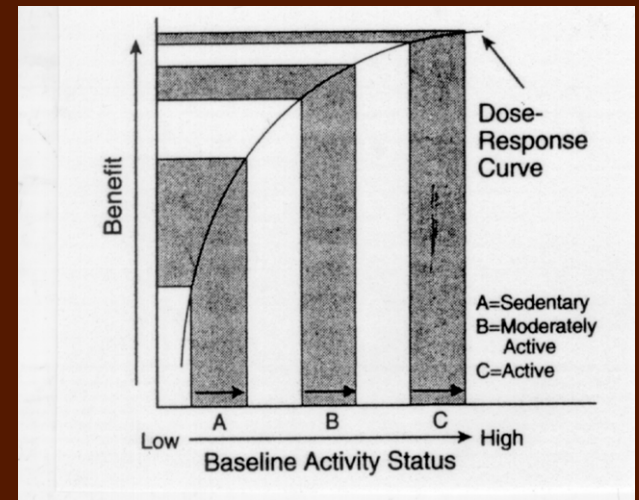
Moderate levels of physical activity can have significant health benefits

- DHHS Guidelines: 30 minutes, 5 times a week, 10 minute intervals

Physical activity can and should be built into daily routines

Choice of active versus passive transportation has an impact on level of physical activity and thus health

- Walking to work, the bus, a store, etc. can help achieve the activity guidelines



Blair, et al, 1996  
Surgeon Generals  
Report 10 years ago

## A National Evidence Base

People who live in walkable neighborhoods report 30 min more walking than less walkable areas (Saelens, 2003)

Residents of more urban neighborhoods walk 3x more than suburban neighborhoods (Lawton, 2001)

SMARTRAQ (Frank, 2005)

- Residents of most walkable areas of Atlanta were found to be 2.4 times more likely to get recommended amount of physical activity.
- Each additional hour spend per day driving is associated with a 6% increase in the odds of obesity.
- Each additional kilometer walked per day was associated with a 4.8% reduction in the odds of obesity.

# A National Evidence Base

A 5 % Increase in *walkability* is associated with a:

32 % increase in minutes of walking and biking

A ¼ pt reduction in BMI

- About ½ kilogram

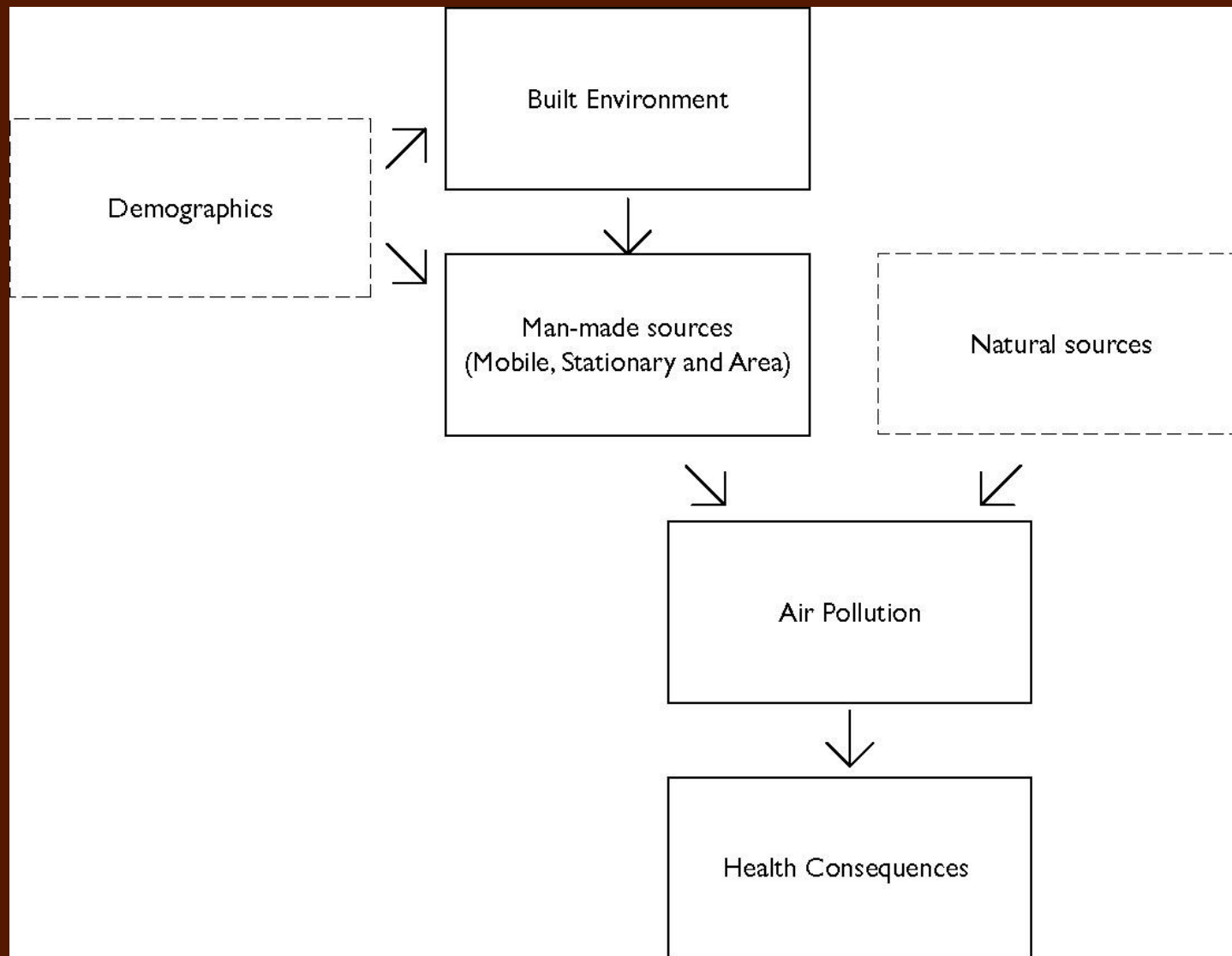
A 6.5 % reduction in per capita vehicle kilometers traveled

A 5.5 percent reduction in ozone precursors

- Oxides of Nitrogen and Volatile Organic Compounds

SOURCE: Frank, L.D. Sallis, J.F., Conway, T., Chapman, J., Saelens, B. Bachman, W. (Winter 2006). Many Pathways from Land Use to Health: Walkability Associations With Active Transportation, Body Mass Index, and Air Quality. [Journal of the American Planning Association](#).

# Cardiovascular and Respiratory Health



# Cardiovascular and Respiratory Health

## Regional air pollution impacted *by driving*

- Density
- Land use mix
- Regional location of development
- Street connectivity
- Increased transit access

## Local air pollution impacted *by proximity to source*

# Fatal and Non-Fatal Injuries

More Driving = More Accidents

Higher Traffic Volume = More Accidents

Higher Vehicle Speeds = More Accidents, Higher Severity

Pedestrian-Friendly  
Street Environment = Fewer Accidents

# conclusions



# Built Environment Characteristics - Summary

Regional location

Density

Mix of land uses

- More types of land uses
- More retail land uses

Transit availability

Parks and trails

Bike lanes, bike trails and  
safe bike storage



# Built Environment Characteristics - Summary

## Land Uses that Result in Walk Trips:

Neighborhood retail uses

Restaurants & taverns

Nearby employment destinations

Grocery stores

Civic uses



# Built Environment Characteristics - Transportation

Road network design

Street cross sections – speed, lanes, on-street parking

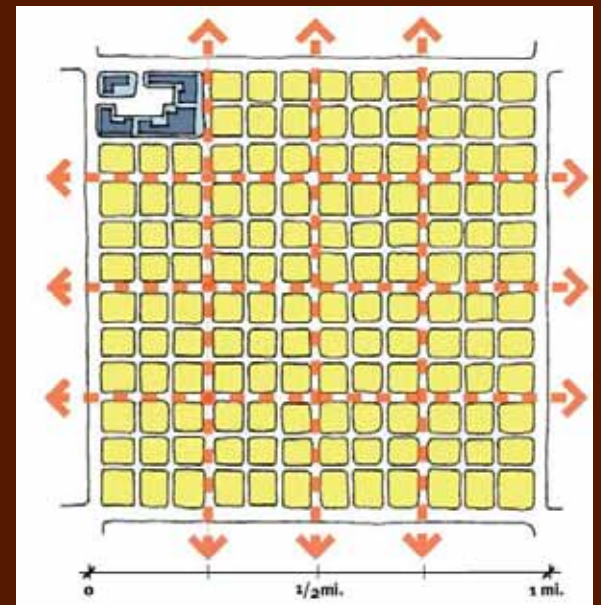
Traffic calming

Access management

Intersection control

Roadside environment

Pedestrian countermeasures



## Summary

### **As amount of walking increases:**

The tendency to be overweight or obese decreases

The tendency to be physically active increases

Per capita air pollution decreases

Transit use increases

# Summary

## As amount of driving increases:

The tendency to be overweight or obese increases

The occurrence of traffic crashes increases

The exposure to air pollution increases

Noise pollution exposure increases

Water quality decreases

Incidents of driving related stress (road rage) increase

Civic participation declines

# Smart Growth: A Piece of the Puzzle

Mix land uses

Take advantage of compact building design

Create a range of housing opportunities and choices

Create walkable neighborhoods

Foster distinctive, attractive communities with a strong sense of place



# Smart Growth: A Piece of the Puzzle

Preserve open space and critical environmental areas

Direct development towards existing communities

Provide transportation choices

Make development decisions predictable, fair and cost effective

Encourage community and stakeholder collaboration



**for additional information**



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