CHILDHOOD OBESITY IN THE UNITED STATES: THE MAGNITUDE OF THE PROBLEM

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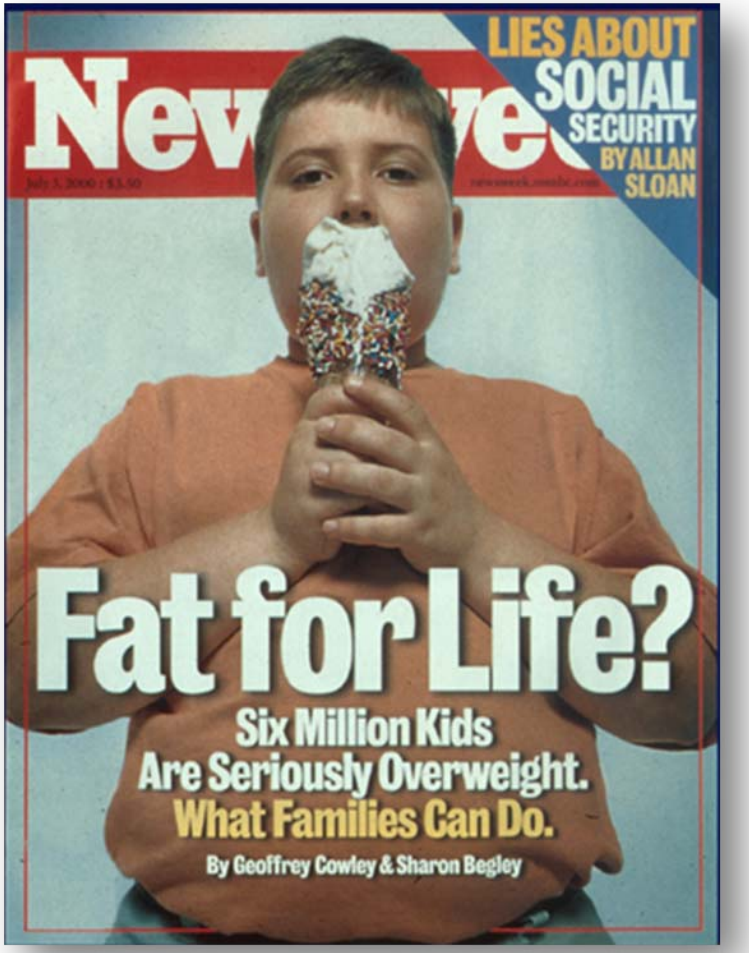
Centers for Disease Control and Prevention

Obesity in the United States 2007–2008

- **Children and teens**
  (2–19 years)
  - 16.9% obese: ~12.5 million
- **Adults**
  (≥20 years)
  - 33.8% obese: ~ 73 million



What is the Weight of the Nation?

- Average American adult is more than 24 pounds heavier today than in 1960
- 23.5 million (10.7%) of adults have diabetes
- About 55% of adults with diagnosed diabetes are obese

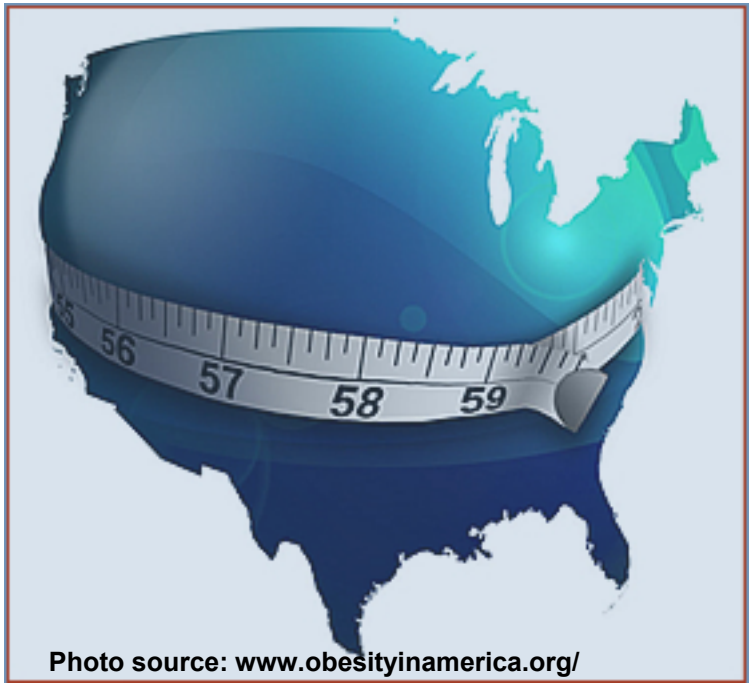


Photo source: www.obesityinamerica.org/

www.cdc.gov/nchs/data/ad/ad347.pdf
www.cdc.gov/diabetes/pubs/pdf/ndfs_2007.pdf
www.cdc.gov/mmwr/preview/mmwrhtml/mm5345a2.htm

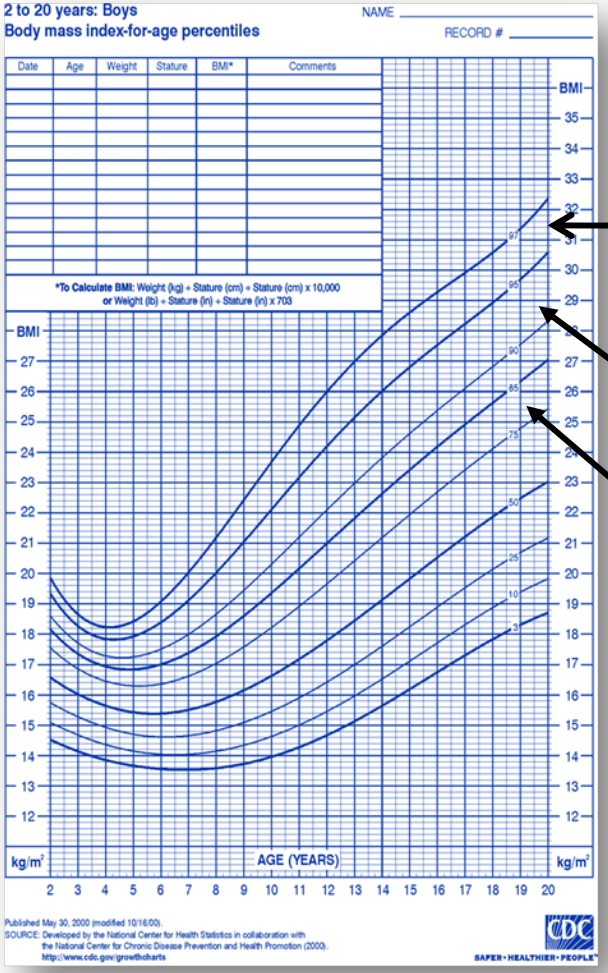
What Is Obesity and How Is It Measured ?

- **Obesity refers to excess body fat**
  - Often impractical to measure
- **Proxy: Excess weight for height**
  - Easy to obtain
  - Various indices
- **Index of choice: Body mass index (BMI)**
  - Weight (kg)/height(m)^2
  - Recommended for adults, adolescents, and children
  - Does not distinguish between fat and muscle

BMI Cutoff Points for Obesity in Children

- **No risk-based cutoffs to define childhood obesity exist**
- **BMI varies with age and sex**
- **A statistical definition of obesity is used for children**
  - Based on BMI-for-age
  - Comparison to a reference population
  - Reference population is often the 2000 CDC growth charts

Defining Obesity in Children Using the 2000 CDC BMI Growth Charts



No agreed-upon definition for severe obesity; in this presentation ≥97th percentile is used

Obesity: ≥95th percentile

95th percentile ≥ overweight ≥85th percentile

www.cdc.gov/growthcharts

BMI-for-age < 85th percentile of CDC growth charts

Huang JS et al, Pediatrics 2007:120:e1127–e119

BMI-for-age
85th ≤95th percentile of CDC growth charts

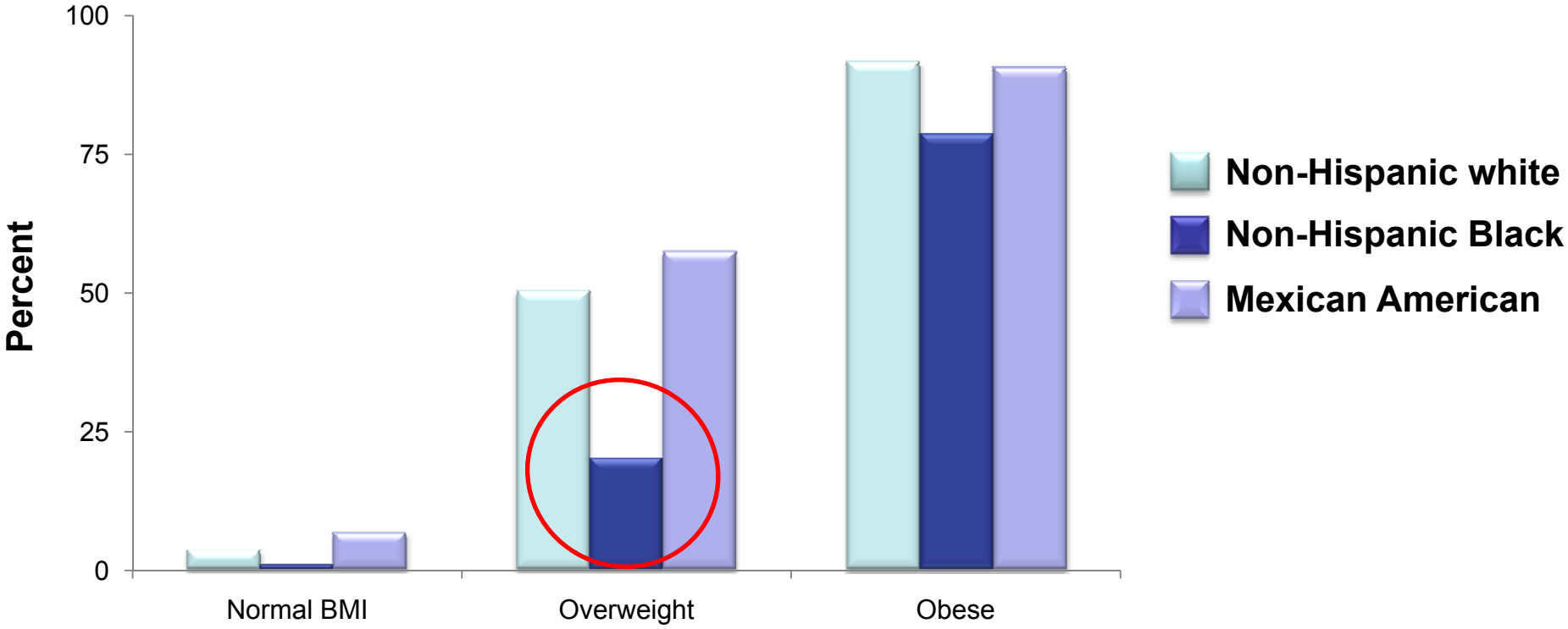
Huang JS et al, Pediatrics 2007:120:e112-e119

BMI-for-age ≥95th percentile of CDC growth charts

Huang JS et al, Pediatrics 2007:120:e112-e119

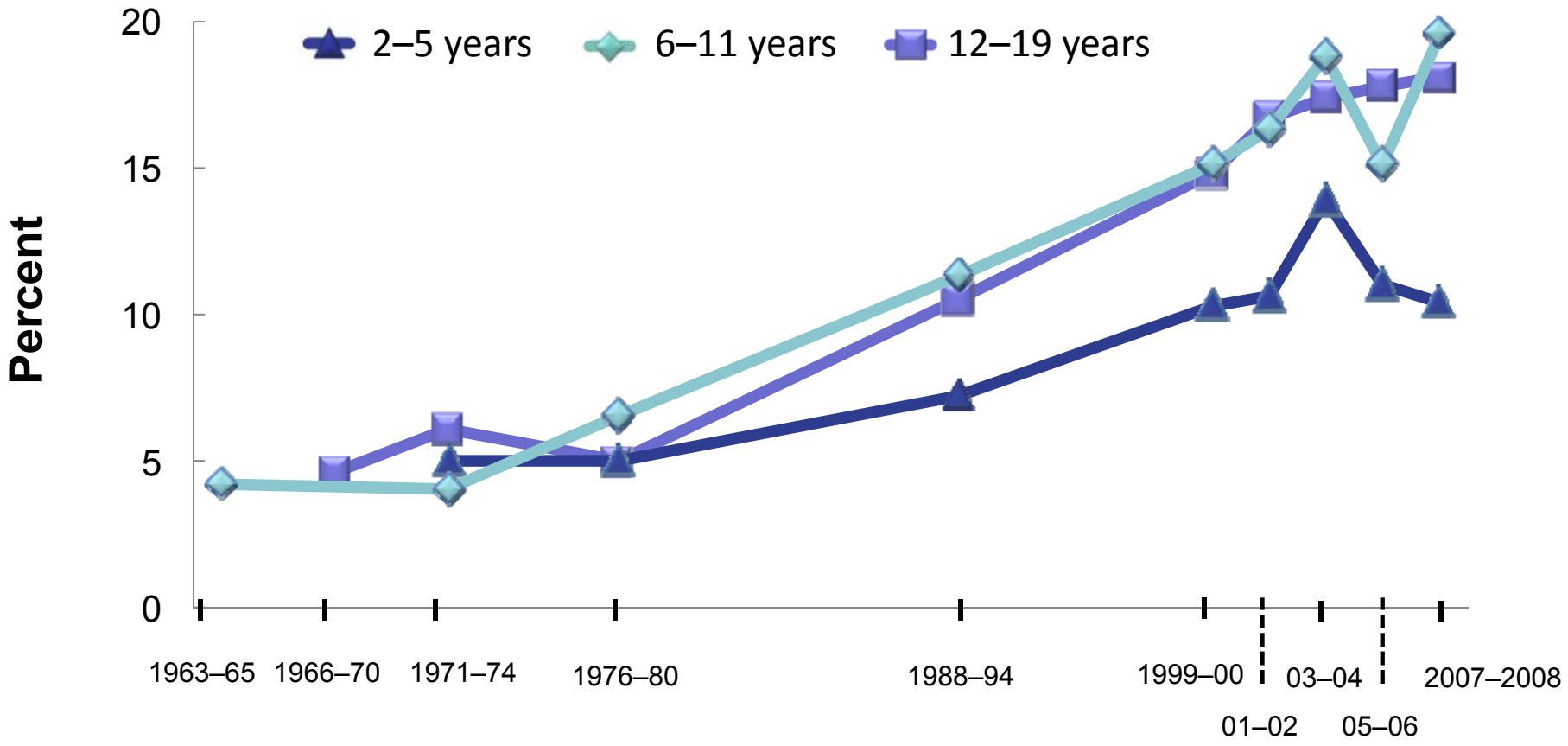
BMI and Body Fat

High Body Fat by BMI-for-Age Category
Girls, 8–19 Years, 1999–2004



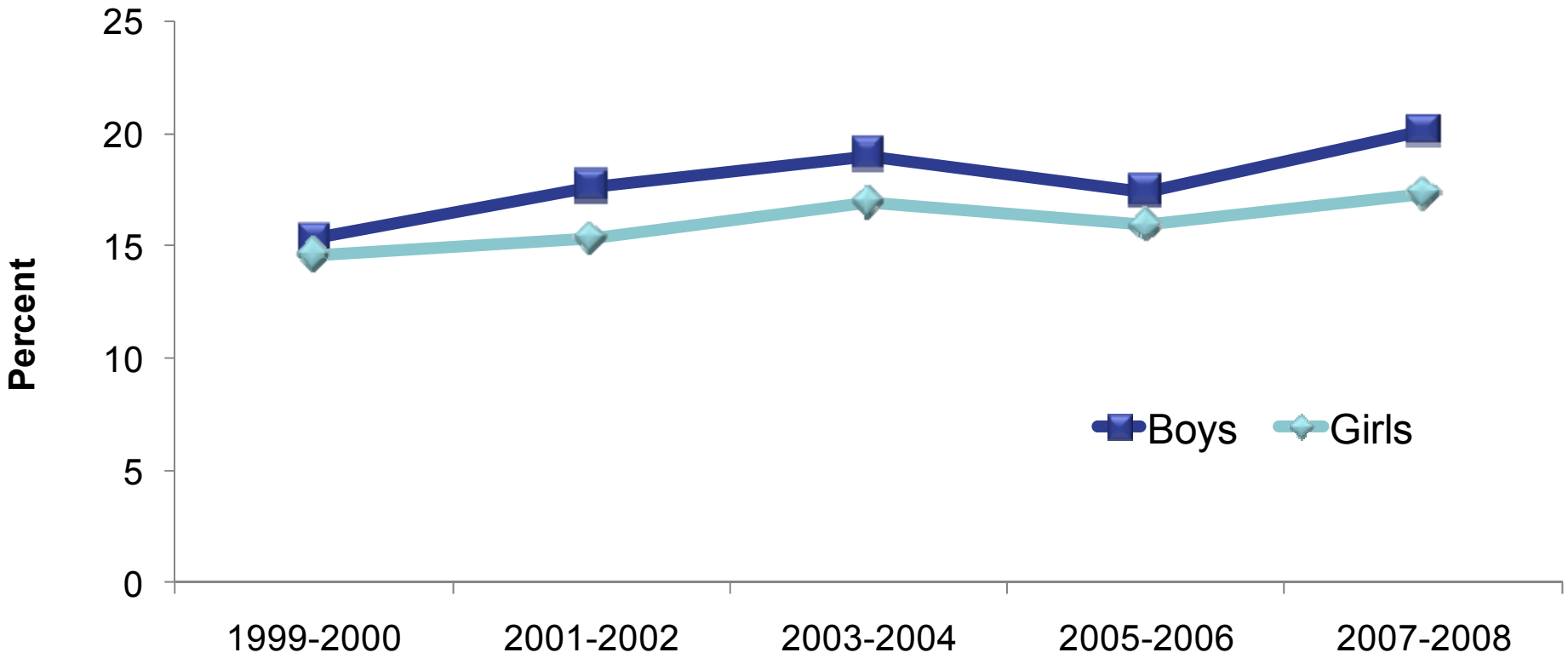
High body fat defined as internal age and sex -pecific 75th percentile of percent body fat
National Health and Nutrition Examination Surveys 1999–2004; Flegal et al, AJCN 2010

Trends in Obesity Among U.S. Children and Adolescents



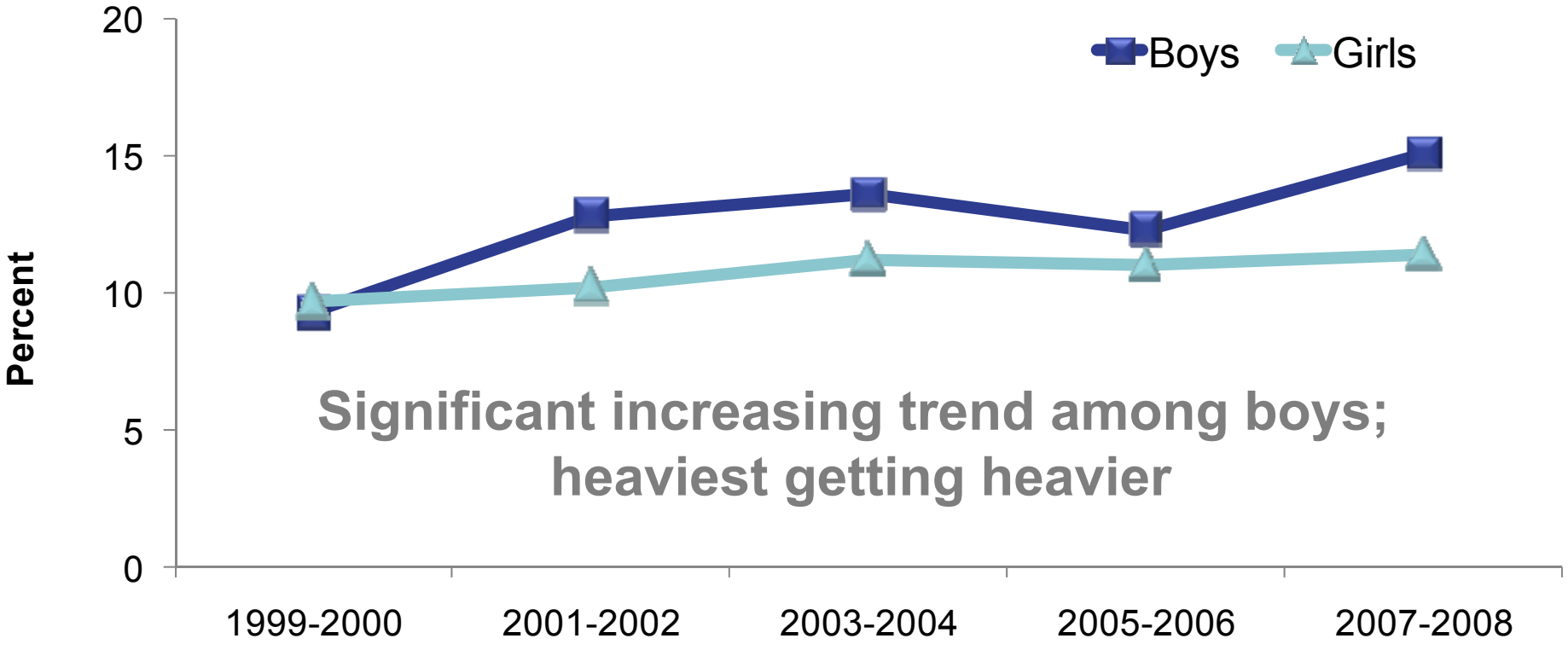
National Health Examination Surveys II (ages 6-11) and III (ages 12-17)
National Health and Nutrition Examination Surveys I, II, III and 1999-2008
www.cdc.gov/nchs/data/hestat/obesity_child_07_08/obesity_child_07_08.htm

Prevalence of Obesity
Children and Teens, 6–19 Years, 1999–2008



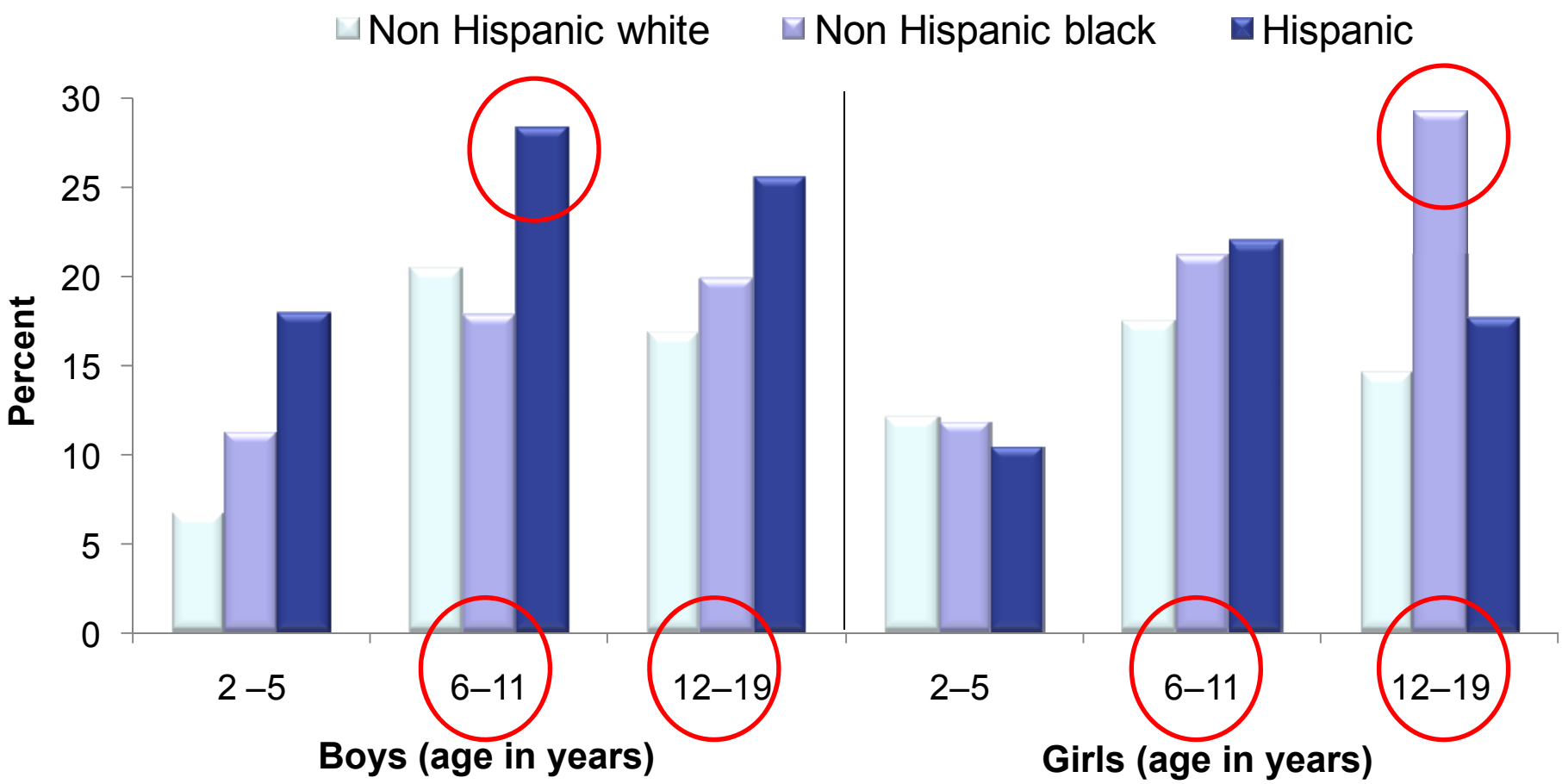
CDC/NCHS, National Health and Nutrition Examination Surveys
Ogden et al, JAMA 2010

Prevalence of Severe Obesity
Children and Teens, 6–19 Years, 1999–2008



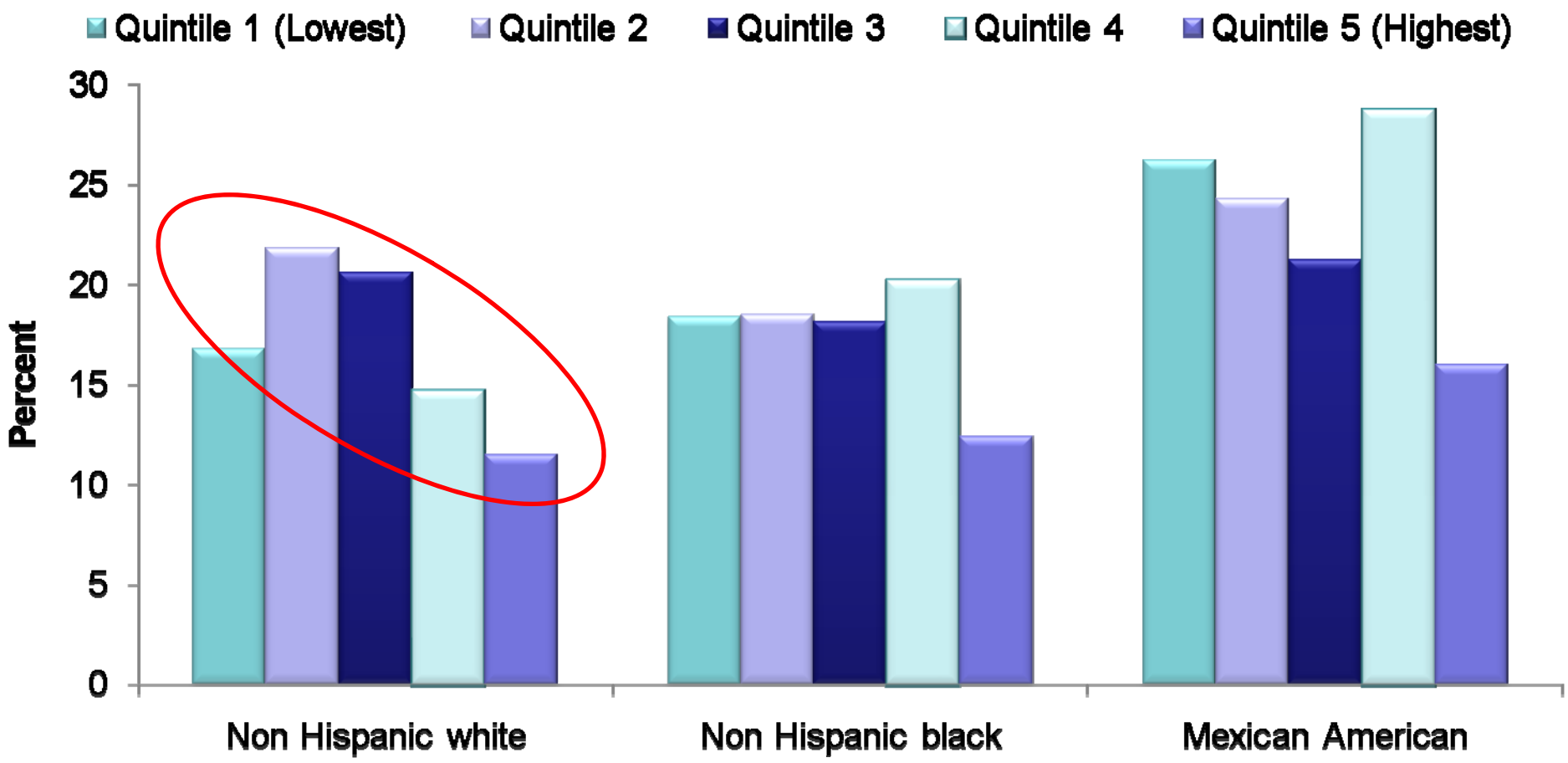
National Health and Nutrition Examination Surveys
Ogden et al, JAMA 2010

Prevalence of Obesity
Children and Teens, 2007-2008



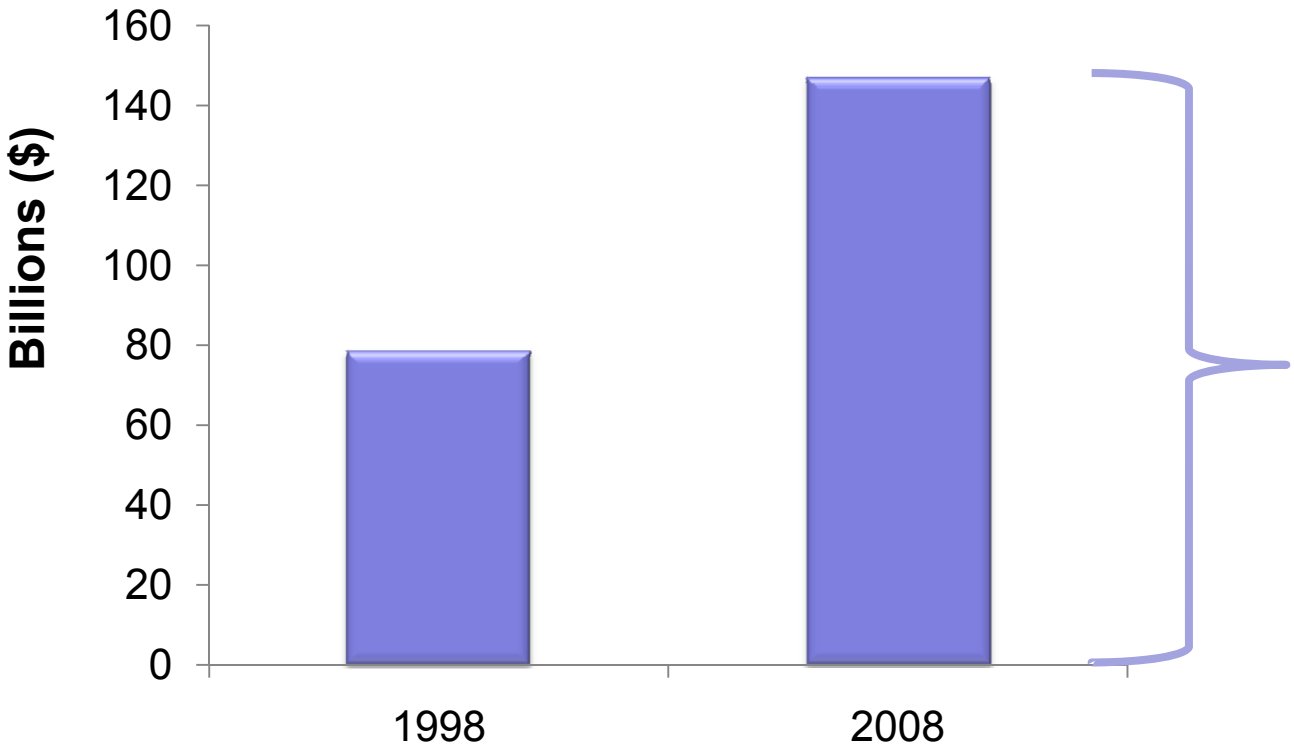
National Health and Nutrition Examination Survey; Ogden et al, JAMA 2010

Obesity and Income
Boys, 6–19 Years, 2001–2006



National Health and Nutrition Examination Survey
Lamb et al, 2009

Annual Medical Cost of Obesity

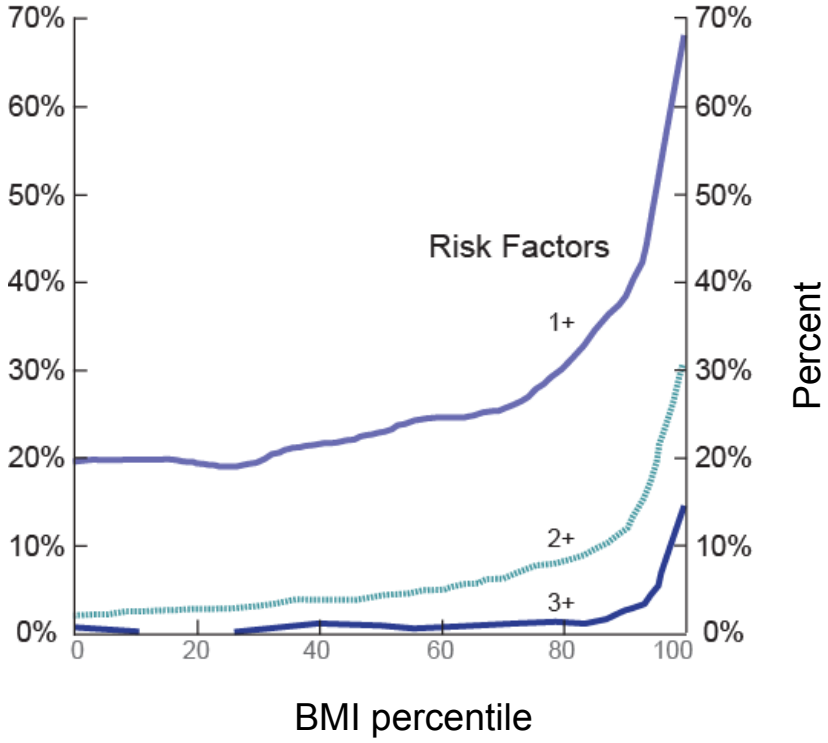


= 9.1%
of all medical costs in the United States

Finkelstein et al. Health Affairs 2009; 28:w822

Immediate Consequences of Childhood Obesity

- **Psychosocial problems**
- **Cardiovascular risk factors**
  - Metabolic syndrome
  - High blood pressure
  - High cholesterol
  - Abnormal glucose tolerance or diabetes
    - Type II diabetes low (<0.25%)
    - Type II represents 15% of new cases among teens
    - Over represented: Blacks, Hispanics, American Indians



Freedman et al, J Pediatrics 2007
SEARCH for Diabetes in Youth Study Group et al. Pediatrics. 2006 Oct;118(4):1510-8.

Long-term Consequences of Childhood Obesity

- **Obesity in childhood tracks to adulthood**
  - This relationship is stronger for older children
  - A systematic review found 24%–90% of obese adolescents become overweight/obese adults
  - In one study
    - 87% of obese adolescents were obese adults
    - 39% of obese adolescents were severely obese adults

Freedman et al, Pediatrics 2009

Childhood Obesity in the United States

- **A childhood obesity crisis exists in the United States**
  - BMI is an imperfect measure of body fat
  - Since 1980, the prevalence has tripled
  - During the last decade, the only increase was among severely obese boys 6–19 years old
  - Health disparities: Among the highest rates, Hispanic boys and African-American girls

- **Consequences**
  - Tremendous financial burden
  - Short term: Include CVD risk factors and diabetes
  - Long term: Childhood obesity tracks to adulthood

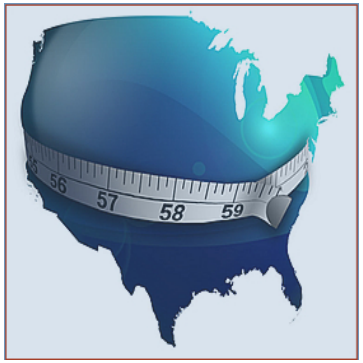


Photo source:
www.obesityinamerica.org/

CHALLENGES AND STRATEGIES TO COMBAT THE CHILDHOOD OBESITY EPIDEMIC

William H. Dietz, MD, PhD
Director
Division of Nutrition, Physical Activity, and Obesity
National Center for Chronic Disease Prevention and Health Promotion
Centers for Disease Control and Prevention

Overview

- **Challenges: Environmental determinants**
  - Shifts in food practices in the United States
  - Changes in physical activity levels
  - Television viewing/food marketing to children
- **CDC perspective**
- **Opportunities: Targeting behaviors**
- **Outcomes and progress: Examples from the field**

Average Daily Energy Gap (Kcal/day) Between 1988–1994 and 1999–2002

	Excess weight gained (lb)	Daily energy gap (Kcal/day)
All teens	10	110–165
Overweight teens	58	678–1,017

Wang C et al. Pediatrics 2006;118:e1721

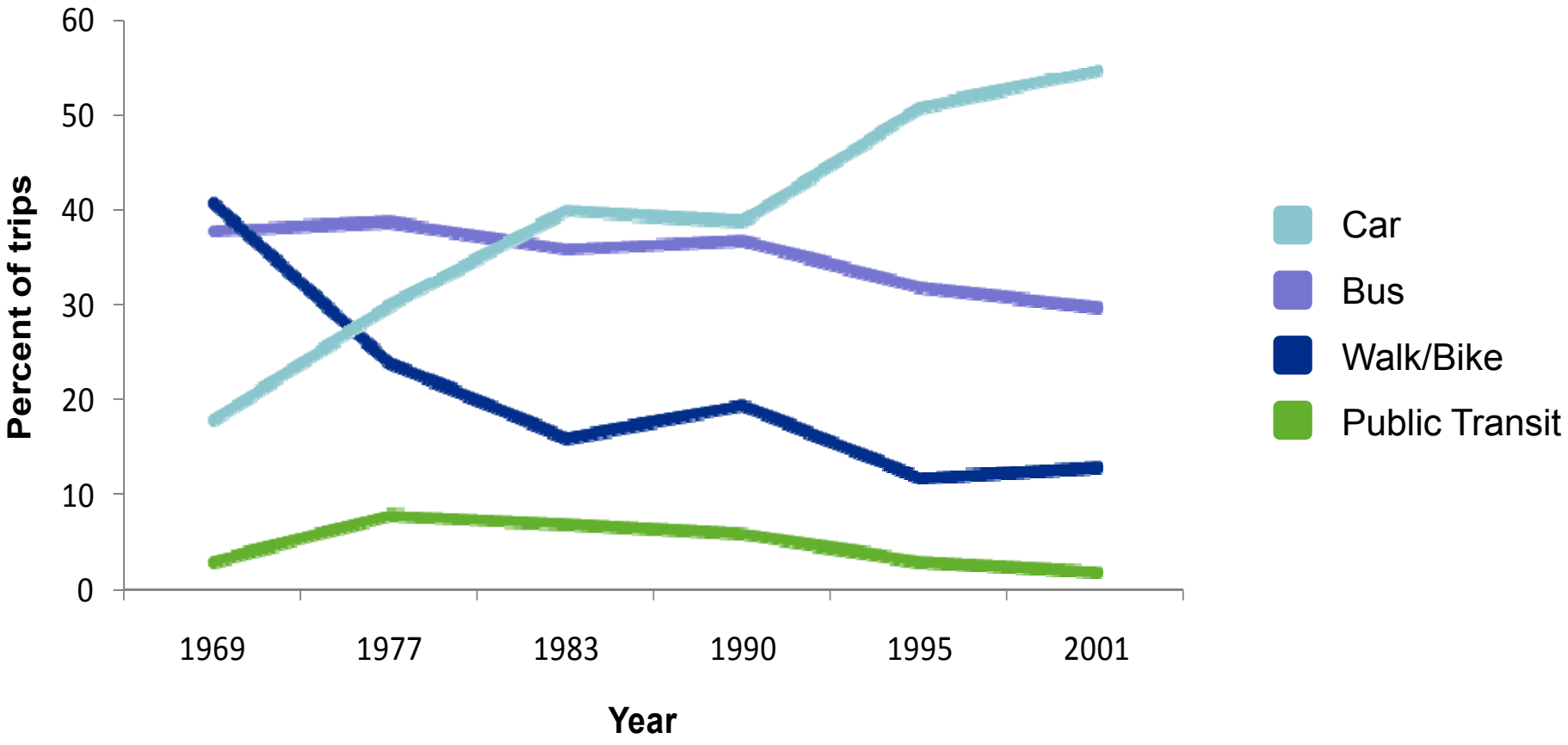
Food Consumed in 1952 by an Average American Family of Four

Shifts in Food Practices in the United States

- Increased cost of healthful foods
- Decreased cost of junk foods
- Increased portion size
- Increased variety
- Increased school vending and a la carte foods

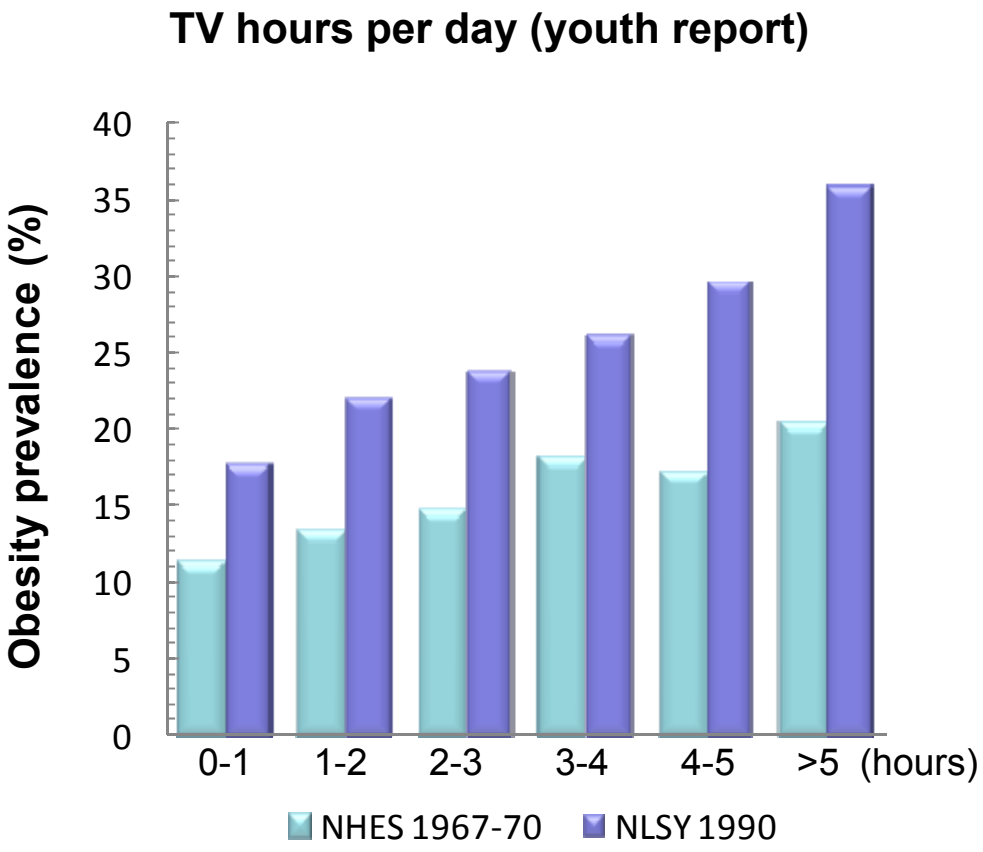
Changes in Physical Activity Levels

Mode for Trips to School - National Personal Transportation Survey



McDonald NC. Am J Prev Med 2007;32:509

Effects of TV Time on Childhood Obesity



- **$1.6B/year spent on ads to promote high-calorie foods and drinks to youth**
- **Television viewing associated with consumption of foods advertised on television**
- **70% children and 30% children <3 year old have TVs in their rooms**

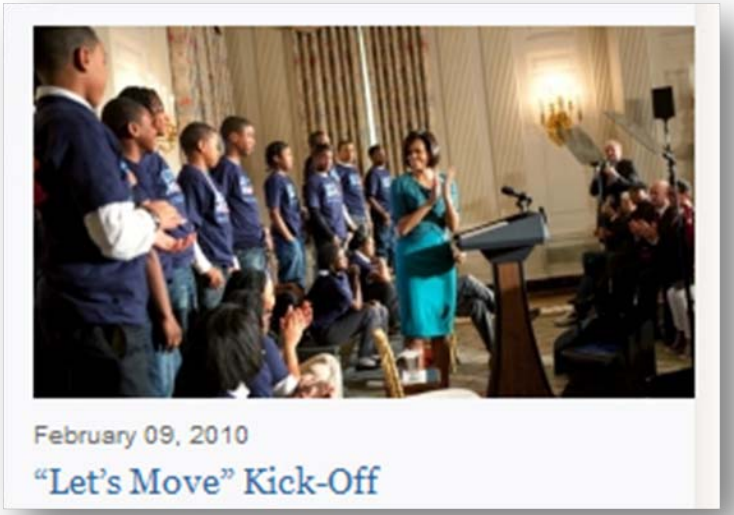
NHES, National Household Education Surveys
NLSY, National Longitudinal Survey of Youth

CDC's Perspective

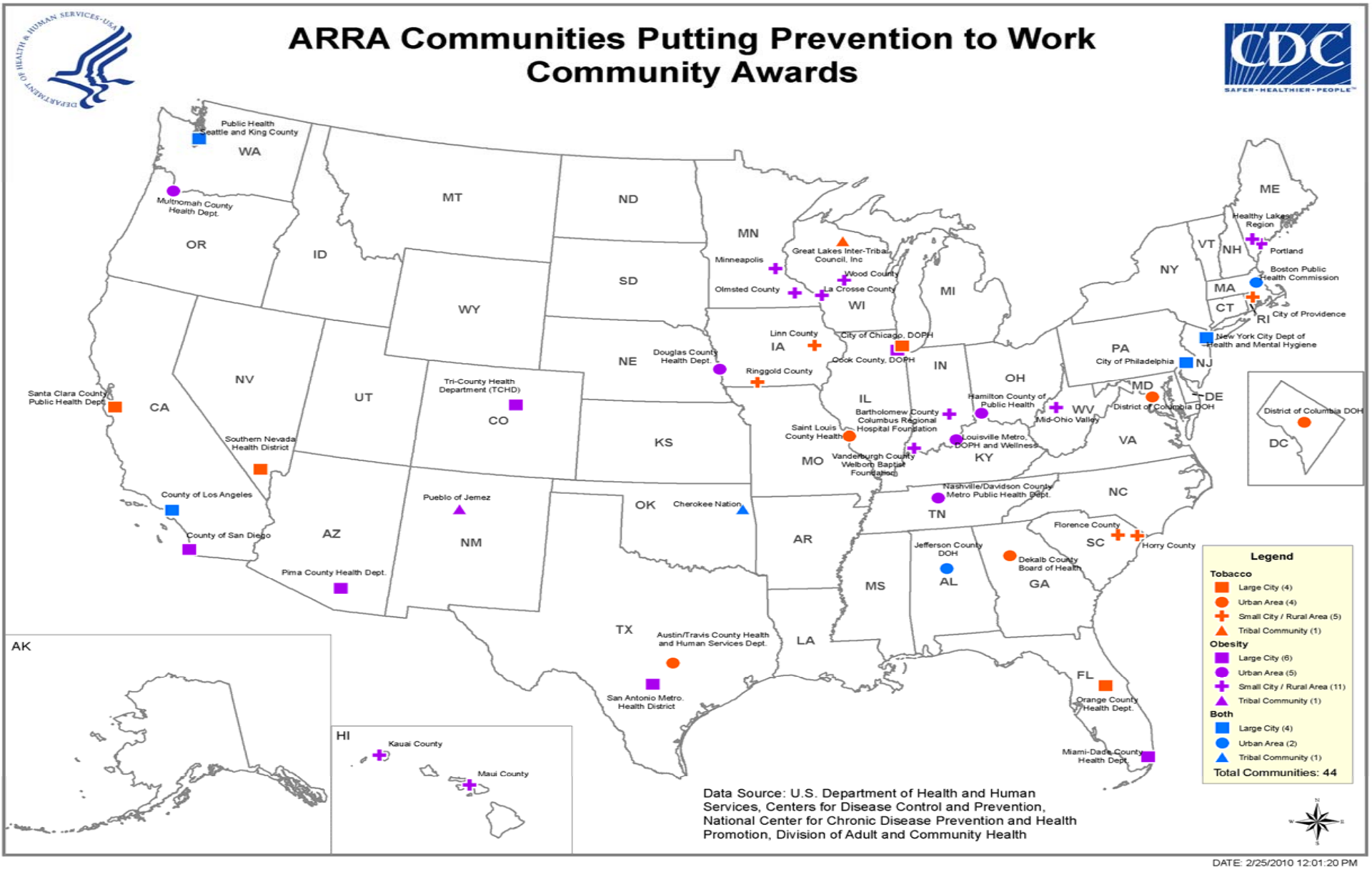
- Identification of cause less important than identification of effective interventions
- Focus needed on population strategies that will change the food and physical activity environments
- Interventions aimed at single targets likely less effective than comprehensive multisectoral approaches
- Rely on evidence-based practice and practice-based evidence

New Initiatives

- **Let's Move**
  - Empower parents
  - Healthier food in schools
  - Physical activity
  - Access to affordable healthy food
- **Childhood Obesity Task Force**
- **HHS Healthy Weight Task Force**
- **Convergence Partnership**



ARRA Communities Putting Prevention to Work
Community Awards



Data Source: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Adult and Community Health

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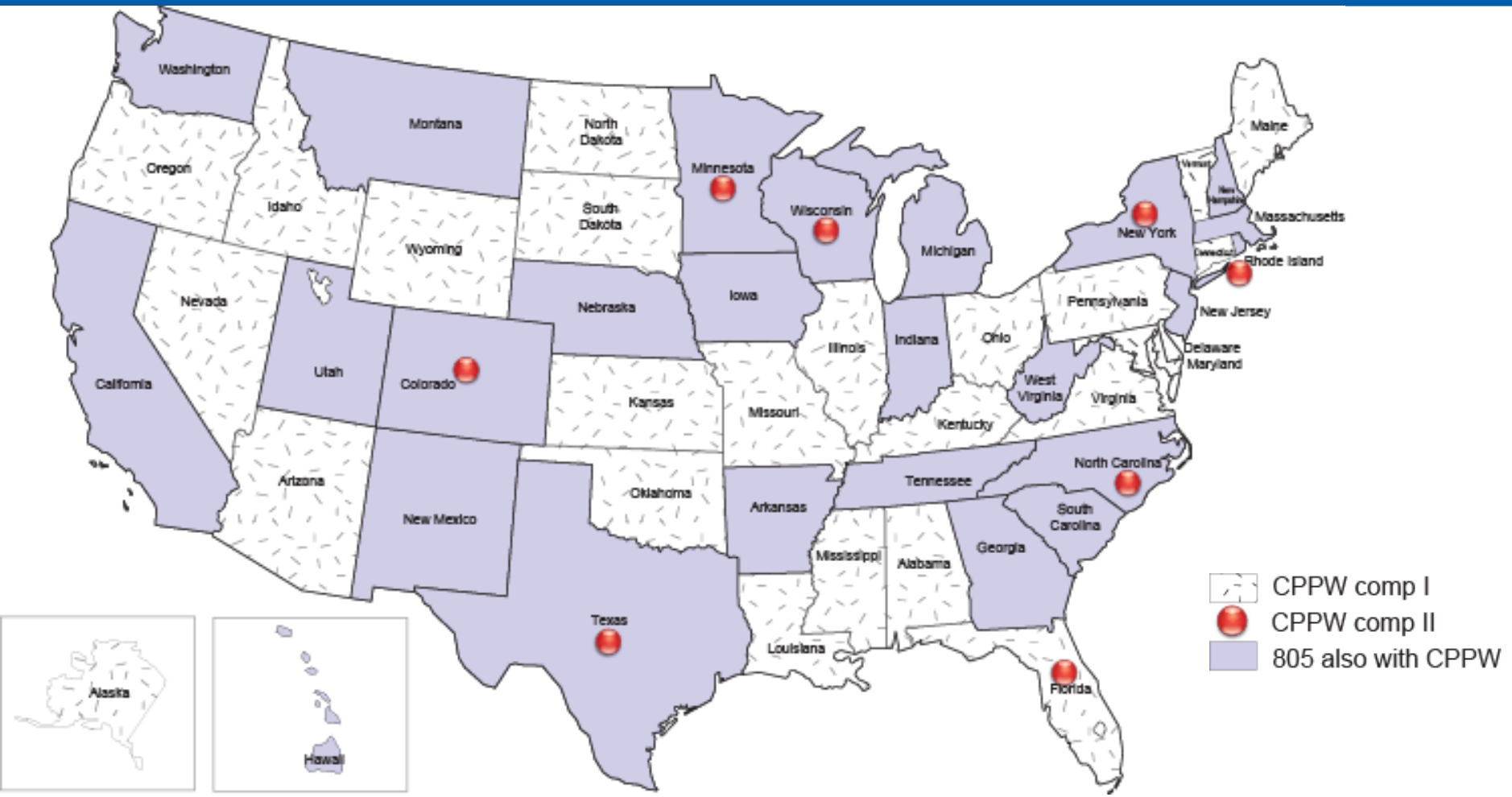
State Programs Putting Prevention to Work



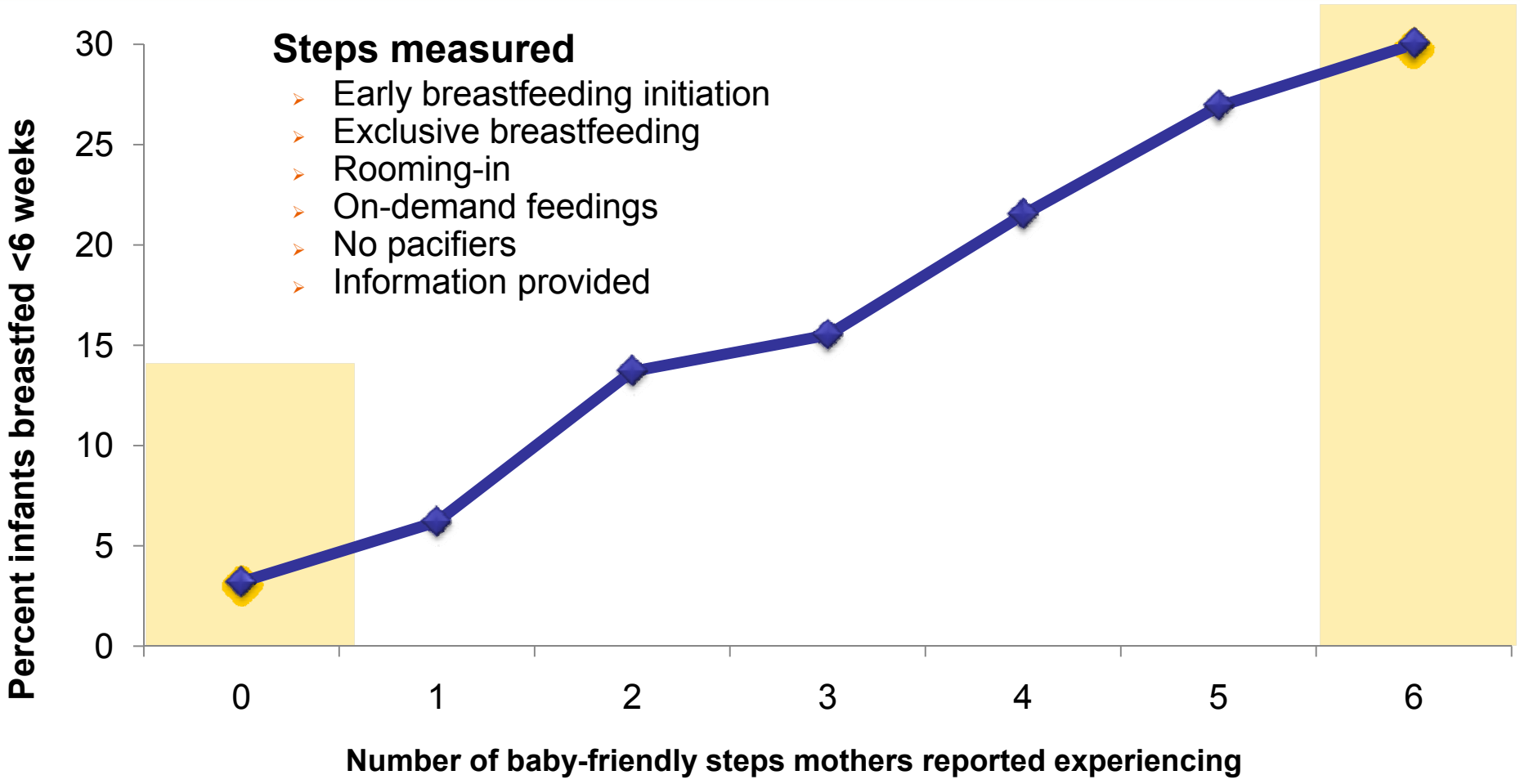
CPPW, Communities Putting Prevention to Work

Principal Targets

- **Prenatal/Pregnancy: Pre-pregnant weight, weight gain, diabetes, and smoking**
- **Breastfeeding**
- **Reduce energy intake**
  - Decrease high-energy density foods
  - Increase fruit and vegetable intake
  - Reduce sugar-sweetened beverages
  - Decrease television time/food marketing to children
- **Increase energy expenditure**
  - Increase daily physical activity

Prenatal/Pregnancy Targets

The Number of Baby Friendly Steps in Place Predicts Early Breastfeeding Cessation

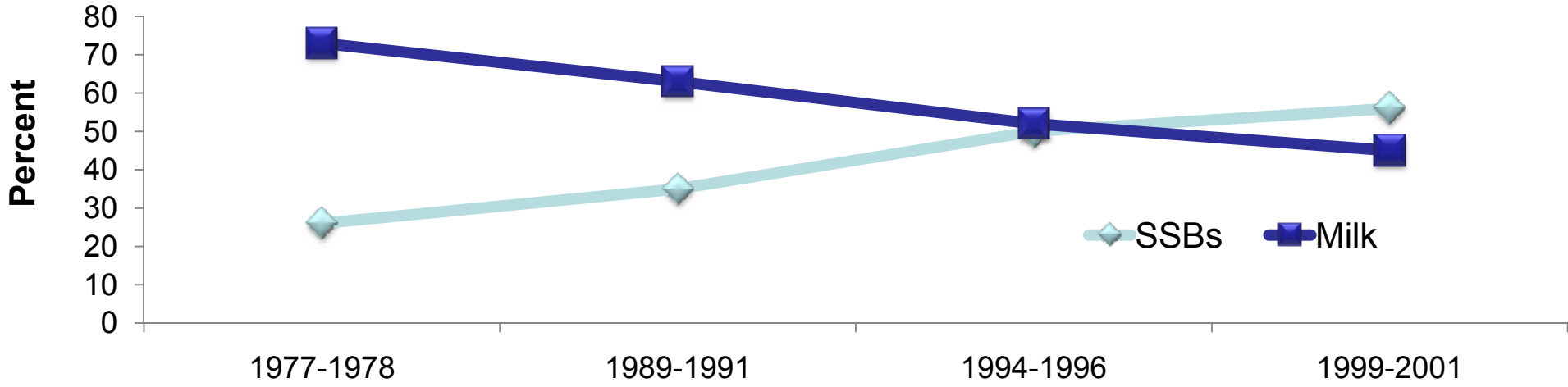


DiGirolamo et al, Pediatrics 2000 (Suppl 2); 22:S43-S49, 200.

Reduce Energy Intake

Decrease Sugar-sweetened Beverage (SSB) Intake

- Water instead of SSBs reduces caloric intake in 2–19 year-olds by 235 Kcal/day
- Efforts of states, communities and the Alliance for a Healthier Generation have substantially reduced SSB calories consumed in schools
- Only 7%–15% of calories from SSBs are consumed in schools



Rudd Report. Soft Drink Taxes. www.yaleruddcenter.org

Reduce Energy Intake
Strategies to Decrease Sugar-sweetened Beverage (SSBs) Intake

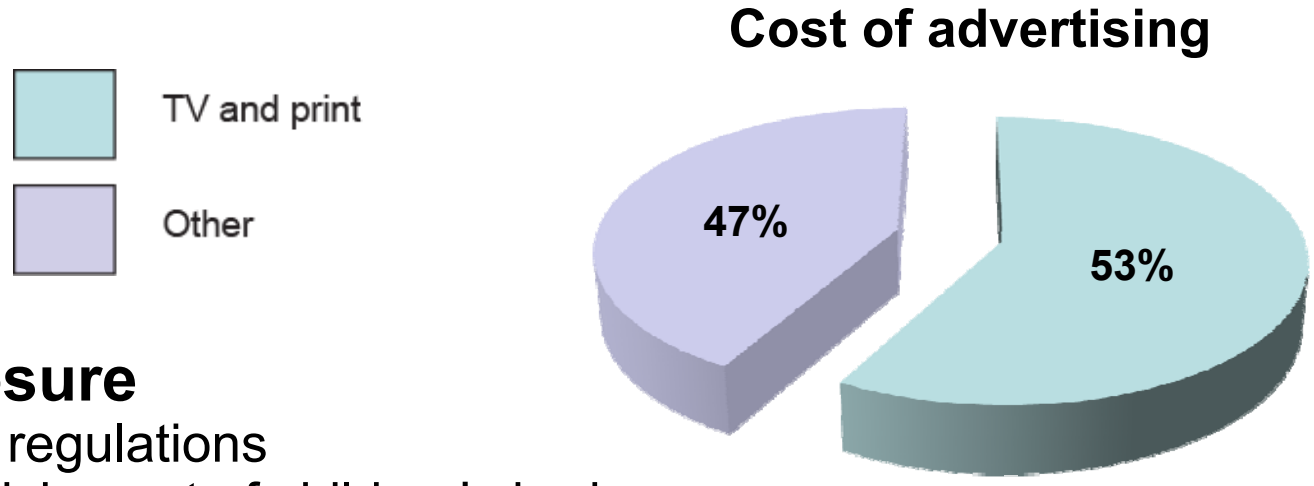
- **Strategies to decrease SSB intake**
  - Policies that eliminate the use of these products in child care and after school programs
  - Increased availability of water in public venues
  - Competitive pricing in vending machines that increase the price of SSBs, and using that revenue to subsidize and lower the price of healthier beverages

Reduce Energy Intake

Strategies to Reduce Consumption of High Caloric Density Foods

- **Menu labeling**
  - May reduce consumption
  - May prompt product reformulation
- **Change the default choice**
- **Reformulation**
  - Healthy Weight Commitment: Reduction of 12.5 Kcal/person by 2015
- **Procurement policies**

Strategies to Address Effects of Television on Childhood Obesity



- **Limit exposure**
  - Child-care regulations
  - Keep television out of children's bedrooms
- **Children's Food and Beverage Initiative**
- **FTC/CDC/FDA/USDA Working Group: More rigorous standards**

FTC, Federal Trade Commission
CDC, Centers for Disease Control and Prevention
FDA, Food and Drug Administration
USDA, United States Department of Agriculture

Increase Energy Expenditure

Strategies to Increase Physical Activity

- Critical role in prevention of obesity and comorbidities
- Safe routes to school
- Quality physical education programs
- Improve community infrastructure to support physical activity

Results of Philadelphia School Nutrition Policy Initiative After 2 Years

	Intervention schools	Control school
Percent of students who became overweight	7.5%	15%
Percent of students overweight	10% ⇩	26% ⇧
Hours of Inactivity	~ 9% ⇩	~3% ⇧
Hours of weekday television watching	~ 1% ⇩	~7.5% ⇧

Foster G et al. Pediatrics 2008:121:e794-e802

The Challenges Ahead

- Lack of intervention studies
- More practice-based evidence
- Reductions in calories from SSBs and the food supply account for a small fraction of the energy gap
- The combination and dose of strategies to prevent and reduce childhood obesity remains uncertain

OPPORTUNITIES

www.letsmove.gov

POLICY AND SYSTEMS CHANGES IN ACTION

Judith Bell, MPA
***President,* PolicyLink**
***Program Director*, Convergence Partnership**

Overview

- **PolicyLink: Lifting up what works**
- **Convergence Partnership: Collaboration, leverage, synergy**
- **Policy and systems change**
  - Access to healthy foods
  - Building the field locally and regionally
  - The built environment

Lifting Up What Works®

PolicyLink

- **PolicyLink: A national research and action institute advancing economic and social equity by lifting up what works**

- **Place and policy matter**
  - PolicyLink Center for Health and Place
  - PolicyLink Center for Infrastructure Equity
  - Strategic partnership with the Robert Wood Johnson Center to prevent childhood obesity

The Convergence Partnership

- **Collaborative of 6 major funders and CDC**
- **Multi-field, equity-focused, policy and environmental change efforts to achieve healthy people and healthy places**
  - The Robert Wood Johnson Foundation
  - Nemours
  - W.K. Kellogg Foundation
  - Kaiser Permanente
  - The California Endowment
  - The Kresge Foundation
  - Centers for Disease Control and Prevention (technical advisors)

Policy Matters

- Policy impacts the economic, social, physical, and services environments
- Health in all policies: Policies not traditionally thought of as health policies (transportation, agriculture, land use, education, economics) impact health and obesity rates

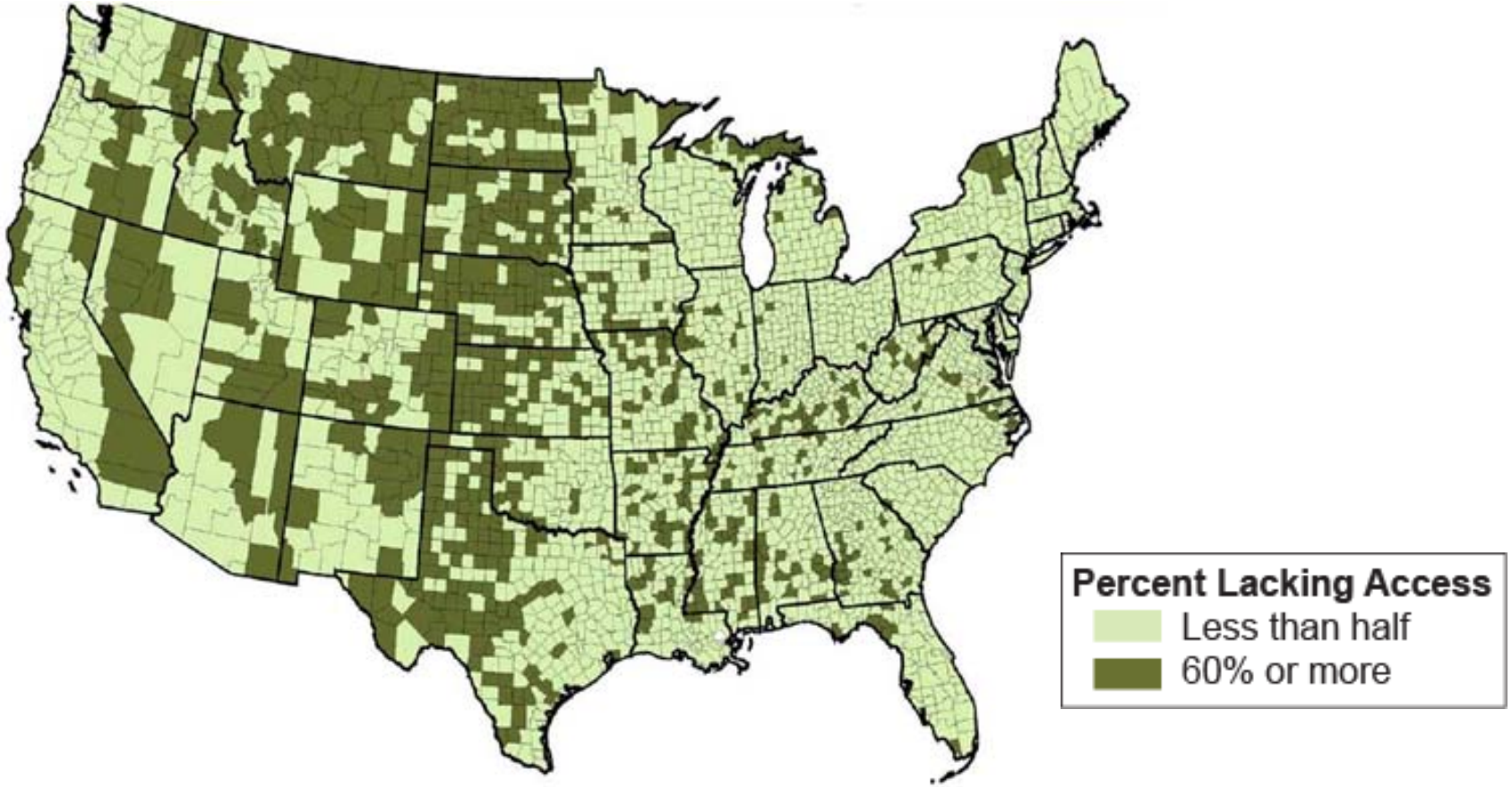
Access to healthy foods
Building the field locally and regionally
The built environment

Access to Healthy Food: The Healthy Food Gap

- **More than 23.5 million Americans live in food deserts**
  - Low-income neighborhoods
  - Communities of color
  - Urban and rural areas
- **Some examples**
  - There is not a major supermarket chain in Detroit
  - In Baltimore, 46% of lower-income neighborhoods have limited access to healthy food—compared with 13% of higher-income neighborhoods

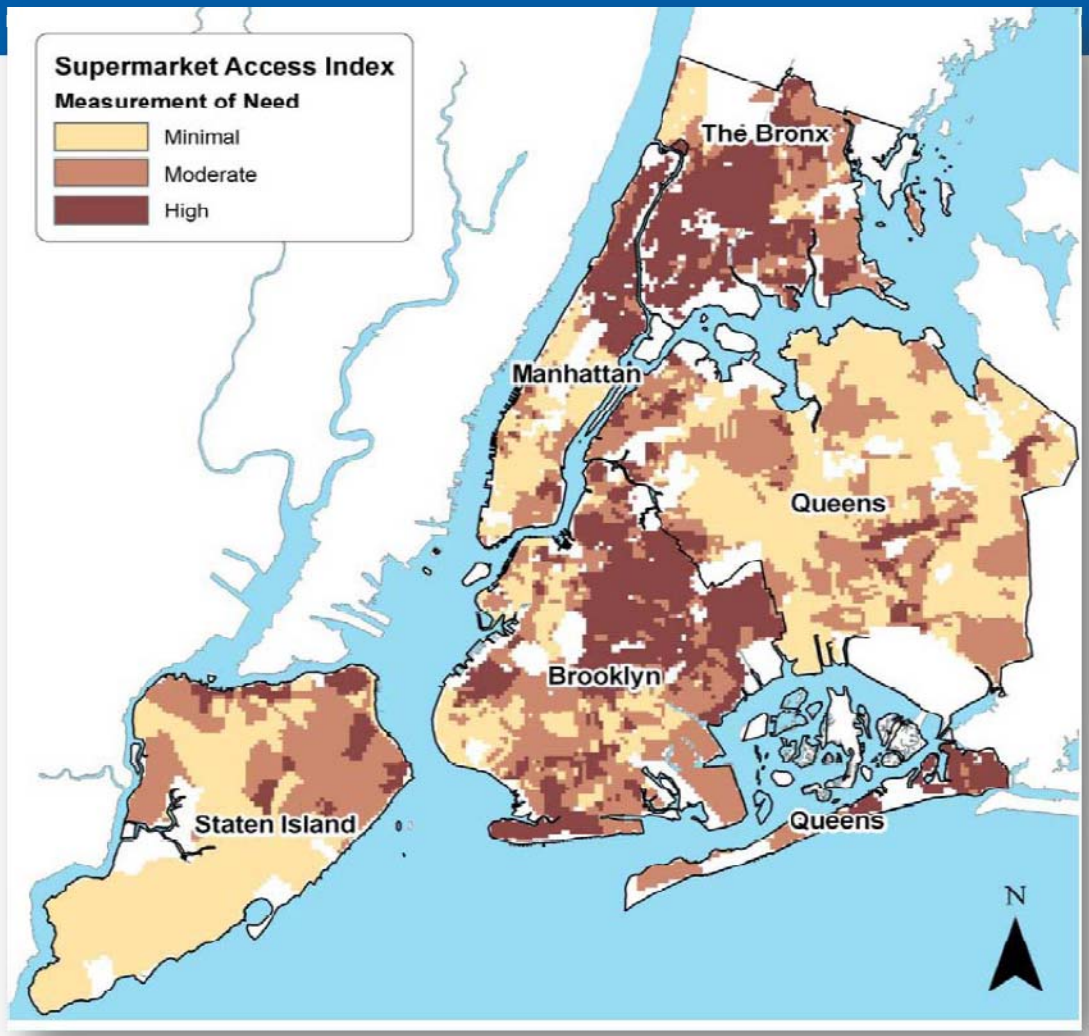
Food Access: Rural America

Percent Lacking Convenient Access to a Supermarket or Supercenter in U.S. Counties, 2000



Wright and Blanchard, 2007

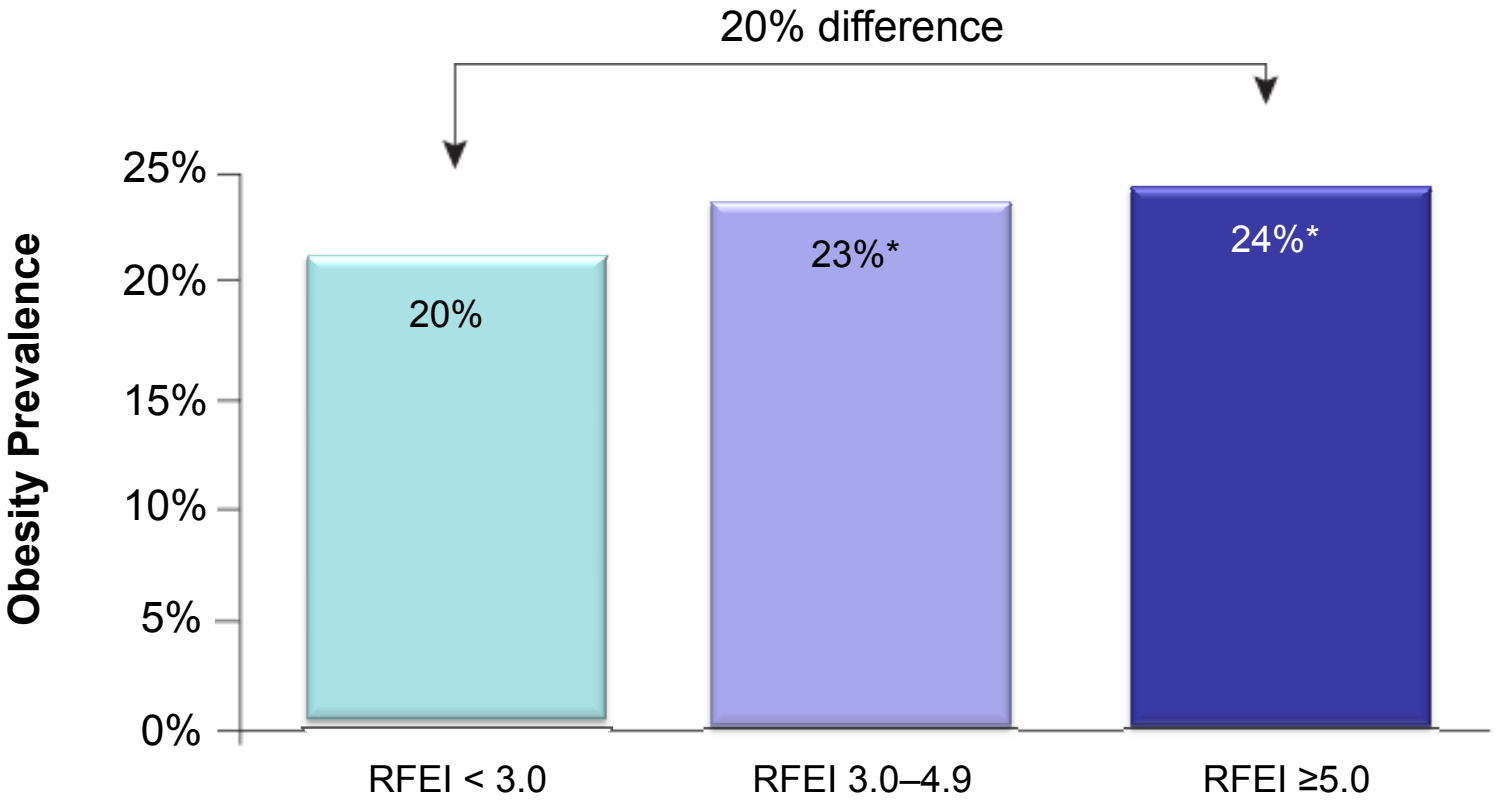
Food Access and Health: New York City



New York City Department of City Planning

Fast Food + Convenience Stores = Greater Prevalence of Obesity

Obesity Prevalence by Retail Food Environment Index (RFEI)
Adults ≥18, California, 2005



California Center for Public Health Advocacy, PolicyLink & UCLA Center for Health Policy Research, 2008

Highlighting What Works
Pennsylvania Fresh Food Financing Initiative

- **Better access = healthier eating and lower risk for obesity and other diet-related diseases**
- **Innovative public–private partnership improving access to healthy foods**
  - 83 approved projects: Supermarkets, farmers markets, co-ops, community supported agriculture
  - Original $30 M public investment leveraged to more than $190 M in total project cost
- **Outcomes: Triple bottom line**
  - 400,000 people with improved access to healthy food
  - 5,000 new jobs
  - Revitalized communities

Momentum for Change

- Replication of PA policy underway in NY, NJ, IL, CO, LA, and CA
- Convergence Partnership: Supports development of national policy
- Local innovations underway: Green carts, zoning incentives, urban agriculture, farm to school

2011 Budget Proposal By President Obama Healthy Food Financing Initiative

- Provides $345 M across USDA, HHS, and Department of Treasury
- Support for a wide range of projects to increase access to healthy foods
- Offers a mix financing tools: Loans, tax credits, and grants
- Diverse supporters: Grocery industry, unions, health, civil rights and children's organizations
- Included in the First Lady's *Let's Move* initiative

Building the Field Locally and Regionally: The Innovations Fund

- Provides 50% matching dollars to equity-focused foundation efforts

Project Type
- Food (2)
- Built environment (2)
- Both (11)

Grantmaking
- Project (5)
- Initiative (7)
- Both (3)

Urban/Rural
- Rural (2)
- Rural/urban (2)
- Urban (11)

Partnerships
- Between foundations (4)
- With organizations (11)
- Multi-field (11)

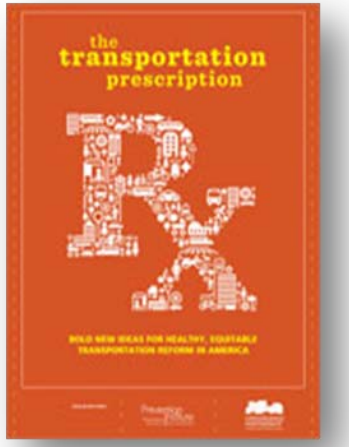
Building the Field Locally and Regionally: Regional Convergence and Local Strategies

- **Regional Convergence**
  - Seed, strengthen, and leverage work and investment in regions
  - Stimulate resources for equity-focused environment and policy change
  - Build new connections, leadership, and capacity
  - Increase possibilities and momentum for multi-sector efforts

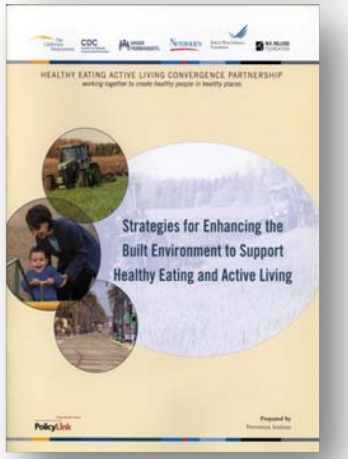
- **Local Strategies**
  - Violence prevention: Six locations linking healthy eating, physical activity, and violence prevention efforts

The Built Environment: Transportation Educating the Field

- **The Transportation Prescription: Bold ideas for healthy, equitable transportation reform**
  - Public transit, walking/biking, economic development, sustainable food systems, injury prevention



- **Strategies for Enhancing the Built Environment to Support Healthy Eating and Active Living**
  - Local strategies: Walkable/bikeable neighborhoods, public transit, joint use of schools, health impact assessments



The Built Environment: Federal Transportation Reauthorization

- **Federal Transportation Reauthorization**
  - Impact on health: Air quality, traffic safety, access to jobs, physical activity
  - Link between obesity and time spent driving
  - Includes funding for pedestrian and bicycle facilities, public transit, Safe Routes to School, and Complete Streets programs
  - Last authorization: $244 B over 6 years
  - Approximately 80% of federal funds are used for highways
  - Convergence Partnership is supporting education and advocacy for new policies by public health organizations and broad coalition

Way Forward

- Multisector, equity-focused approaches are gaining support
- Momentum is building for environmental and policy change
- There are local and state models to support, emulate and scale-up
- There is a need for a two-way street of local innovation and policy change

THE MAINE EXPERIENCE
Let's Go!

Victoria W. Rogers, MD
Director, The Kids CO-OP
The Barbara Bush Children's Hospital
Maine Medical Center

The Maine Story

- **2004: The Maine Youth Overweight Collaborative (MYOC)**
  - Maine medical community and the Maine Harvard Prevention Research Center take initiative
- **2006: Let's Go! in Greater Portland**
  - Multisector approach to addressing childhood obesity using a healthy lifestyle slogan 5-2-1-0
- **2010: Statewide Expansion of Let's Go!**
  - Partner with local Communities Putting Prevention to Work Recipients

5210
Every Day!
5 or more fruits & vegetables
2 hours or less recreational screen time*
1 hour or more of physical activity
0 sugary drinks, more water & low fat milk
*Keep TV/Computer out of the bedroom. No screen time under the age of 2.

The Maine Youth Overweight Collaborative (MYOC) and the Clinician's Role

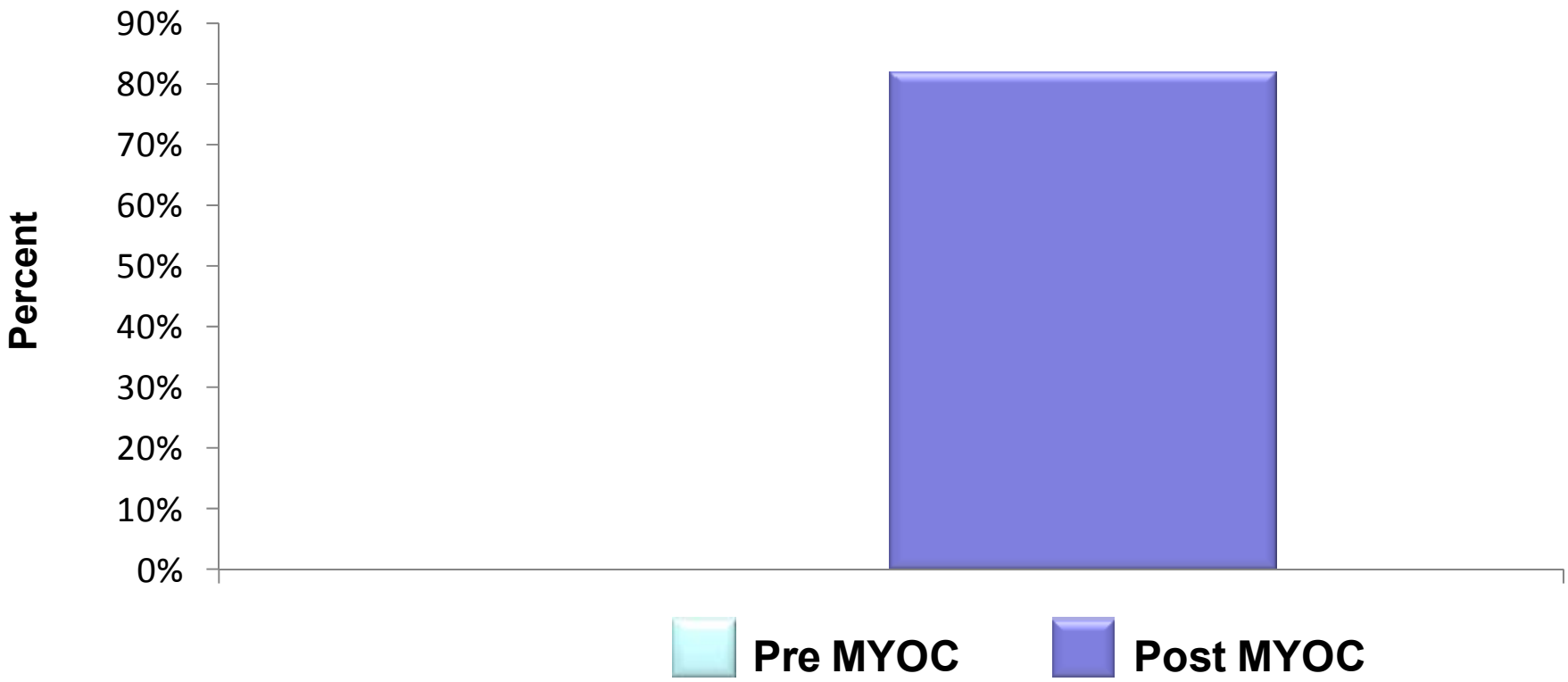
- Create awareness: Hang a 5-2-1-0 Let's Go! poster
- Assess the patient's weight
- Listen to your patients in a respectful manner
- Be a role model
- Join the learning community

Provider Tool Kit

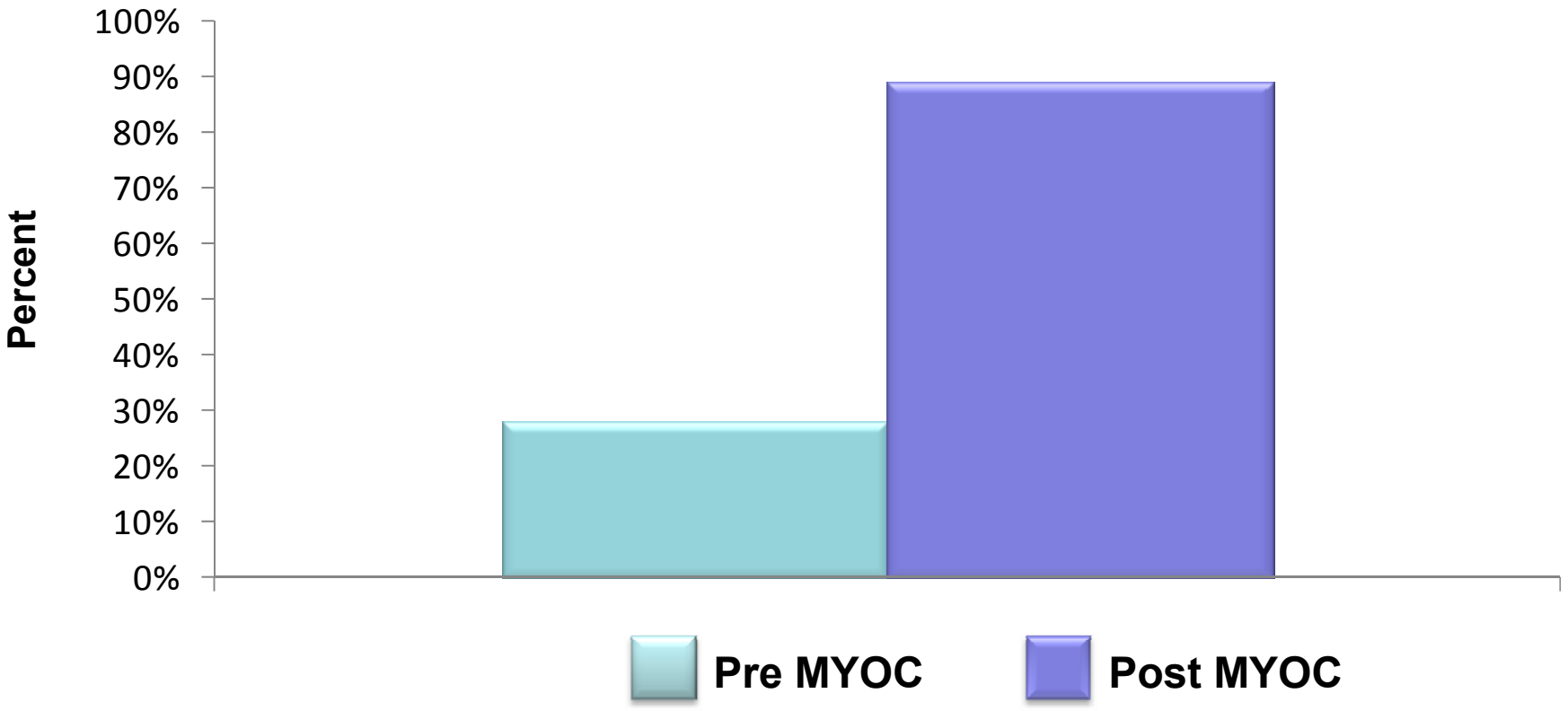
Provider flipchart

- **Clinical guidelines**
  - Prevention
  - Medical evaluation
- **Lifestyle advice**
- **Reference charts**
  - Comorbidity
  - Blood pressure
  - BMI

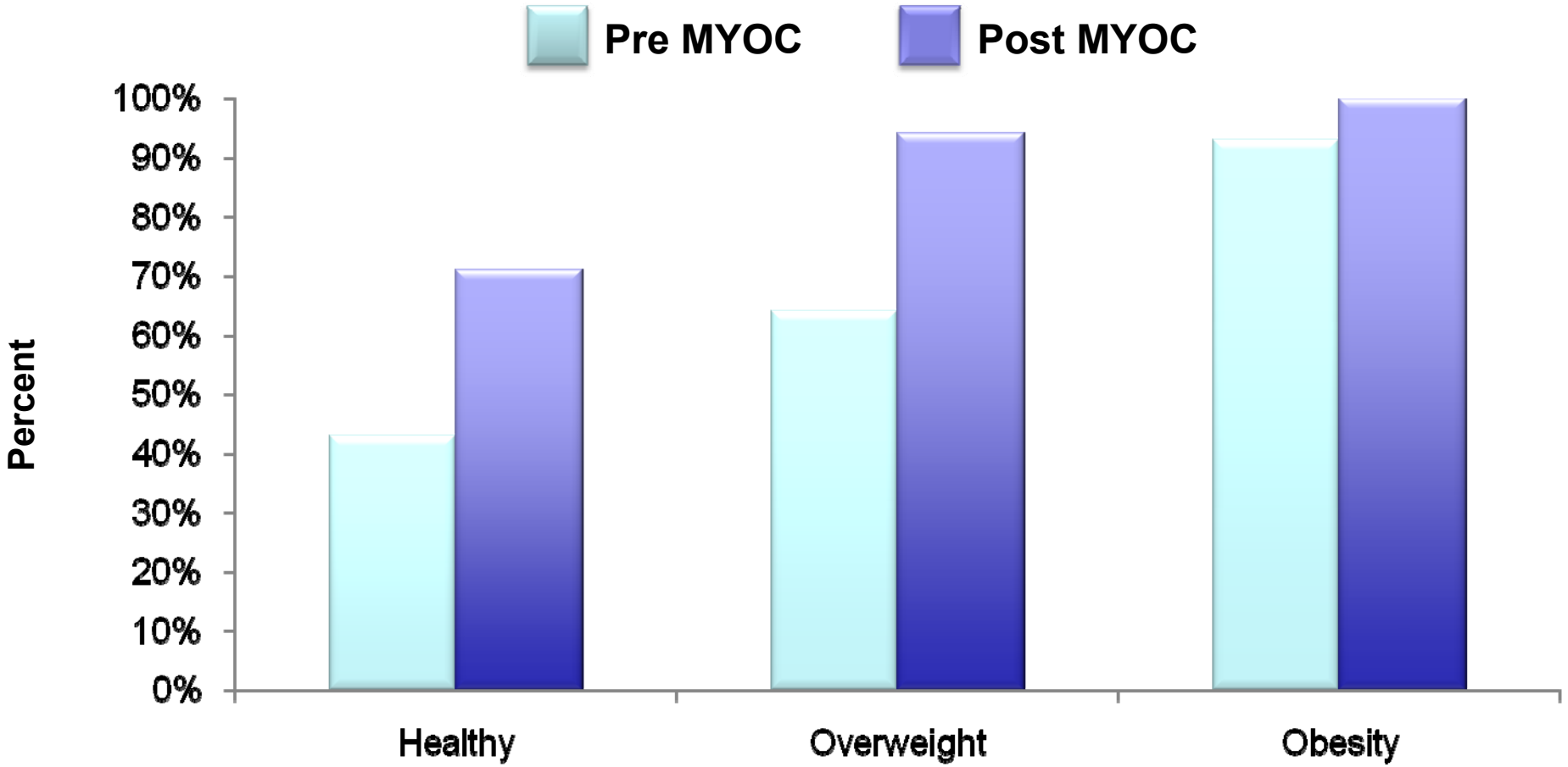
MYOC 2004-2006
Use of 5-2-1-0 Questionnaire by the Providers



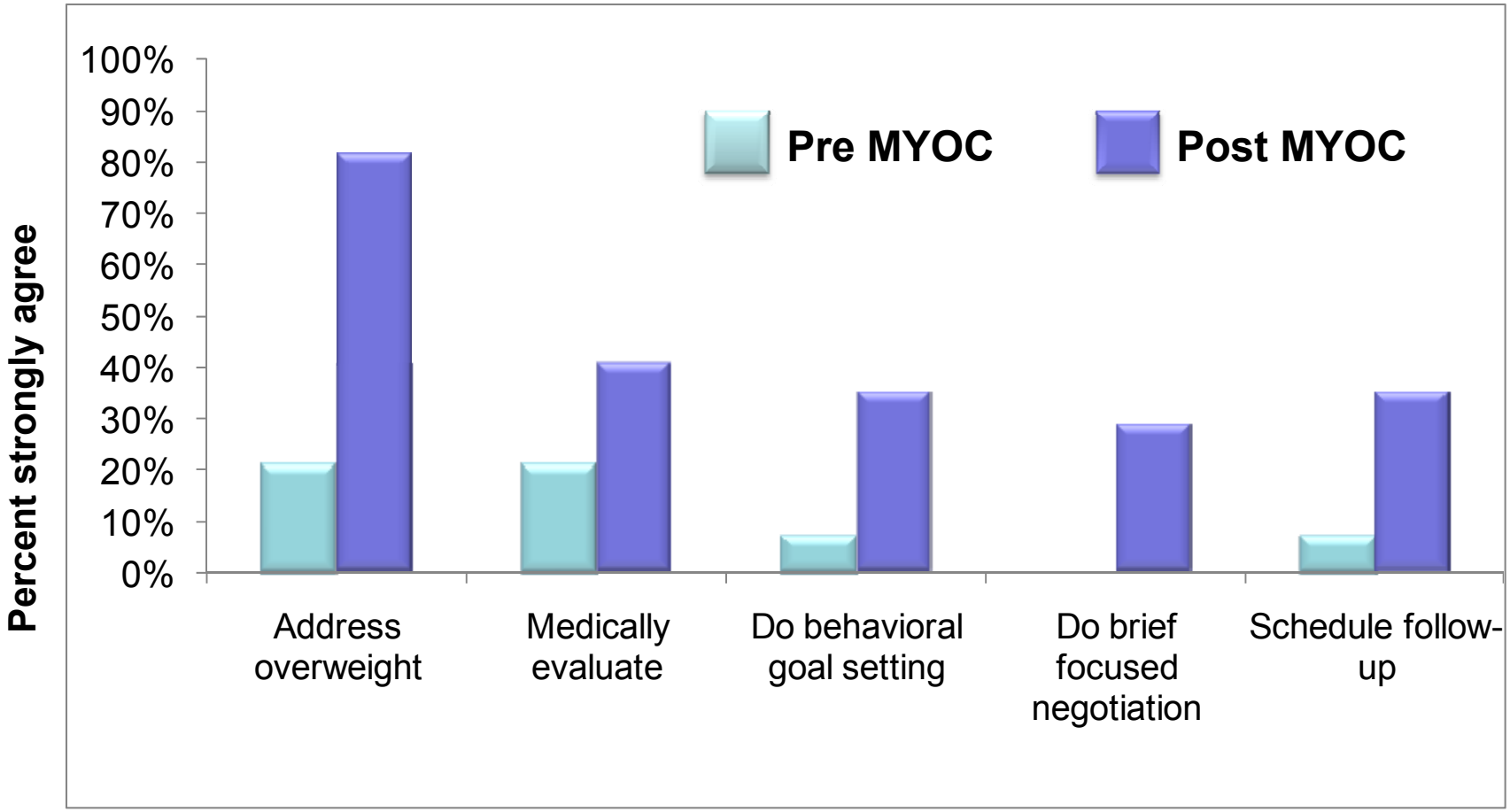
MYOC 2004–2006
Documenting BMI Percentile for Age and Gender



MYOC 2004–2006
Correct Definition of CDC Weight Categories



MYOC 2004–2006
Behaviors and Current Practice



Lessons Learned from MYOC

- **5-2-1-0**
  - "Simple" message
  - Easily delivered and understood
- **Starting tomorrow: Clinician can take basic steps toward impacting the childhood obesity epidemic**

Let's Go!
Profit –Nonprofit Partnership

Anthem. FOUNDATION

Hannaford

Maine Medical Center
centered around you

MaineHealth

TD Bank
America's Most Convenient Bank®

UNUM SM

United Way
United Way of Greater Portland

And Platinum Sponsor

Growing Up Healthy
The Harvard Pilgrim Health Care Foundation

Let's Go!

- **Core Principles**
  - Environmental and policy change influence behavior change
  - Interconnectivity across sectors is essential
  - Strategies are evidence-based and continuously evaluated

A great 5-2-1-0 formation from Kennebunk Elementary's 2010 Wellness Week - Way to go, KES!!

Goes to School

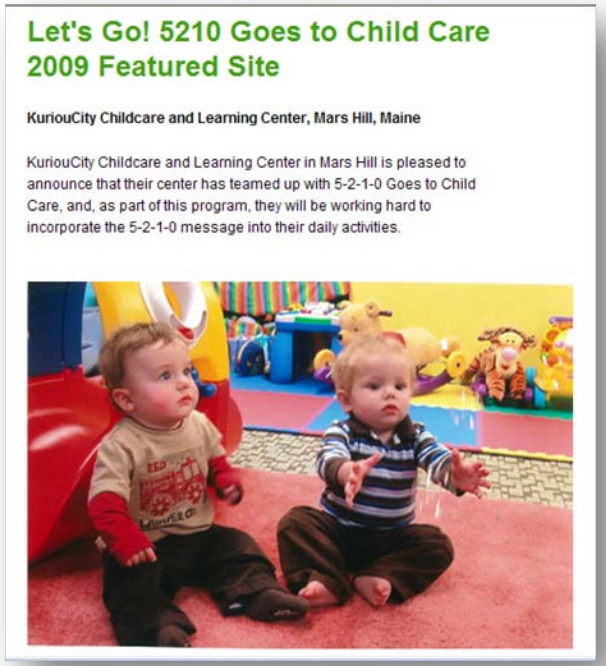
- 10 key strategies for schools to adopt
- Focus on environmental and policy changes
- Links the medical community to the schools

10 Strategies for Success

- ❑ Encourage healthy choices for snacks and celebrations
- ❑ Encourage water and low fat-milk instead of sugar-sweetened drinks
- ❑ Discourage the use of food as a reward; use physical activity as a reward
- ❑ Participate in local, state or national initiatives that promote physical activity and healthy eating
- ❑ Include community organizations in wellness promotion
- ❑ Involve and educate families in initiatives that promote physical activity and healthy eating
- ❑ Incorporate physical activity into the school day
- ❑ Develop a 5-2-1-0 friendly staff wellness policy
- ❑ Collaborate with School Nutrition Program
- ❑ Implement or strengthen a wellness policy that supports the 5-2-1-0

2008 *Let's Go!* Moves into Other Settings

- **Early Childhood**
  - 5-2-1-0 Goes to Child Care
  - State licensing

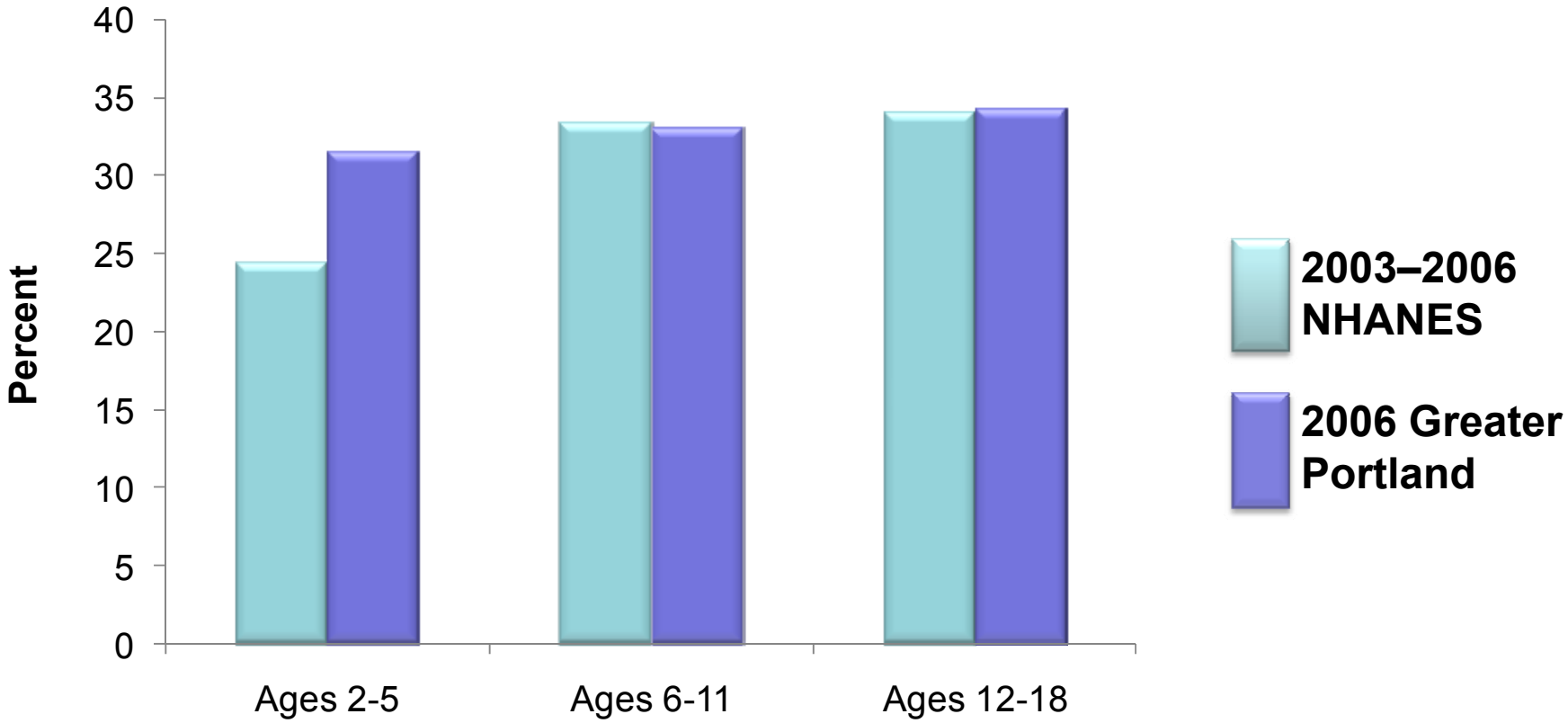


- **Community**
  - StoryWalks
  - Water fountains
  - Trail development
  - 5-2-1-0 Gets Faith

Evaluation of *Let's Go!*

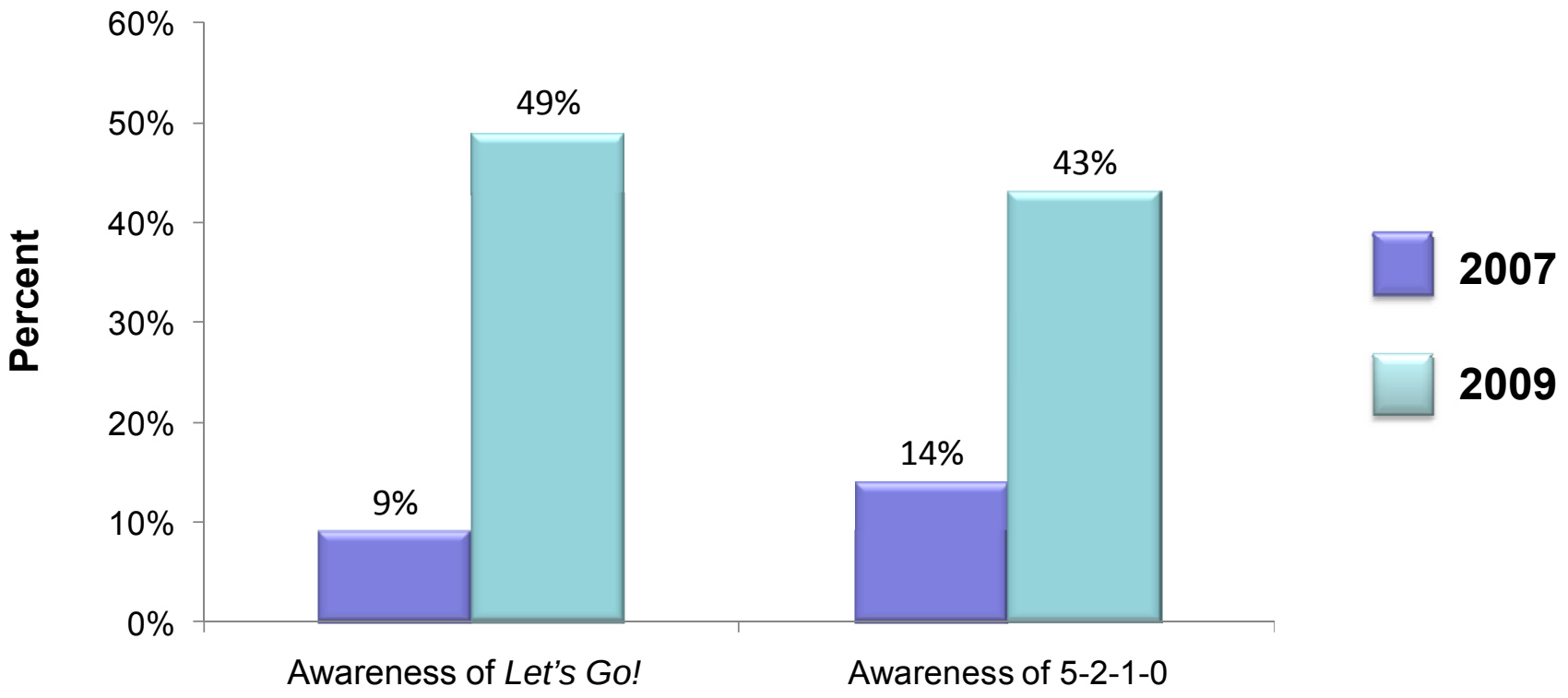
- Tracking local obesity prevalence rates
- Behavior change
- Environmental and policy change

Local Overweight and Obesity Prevalence



NHANES, National Health and Nutrition Examination Survey

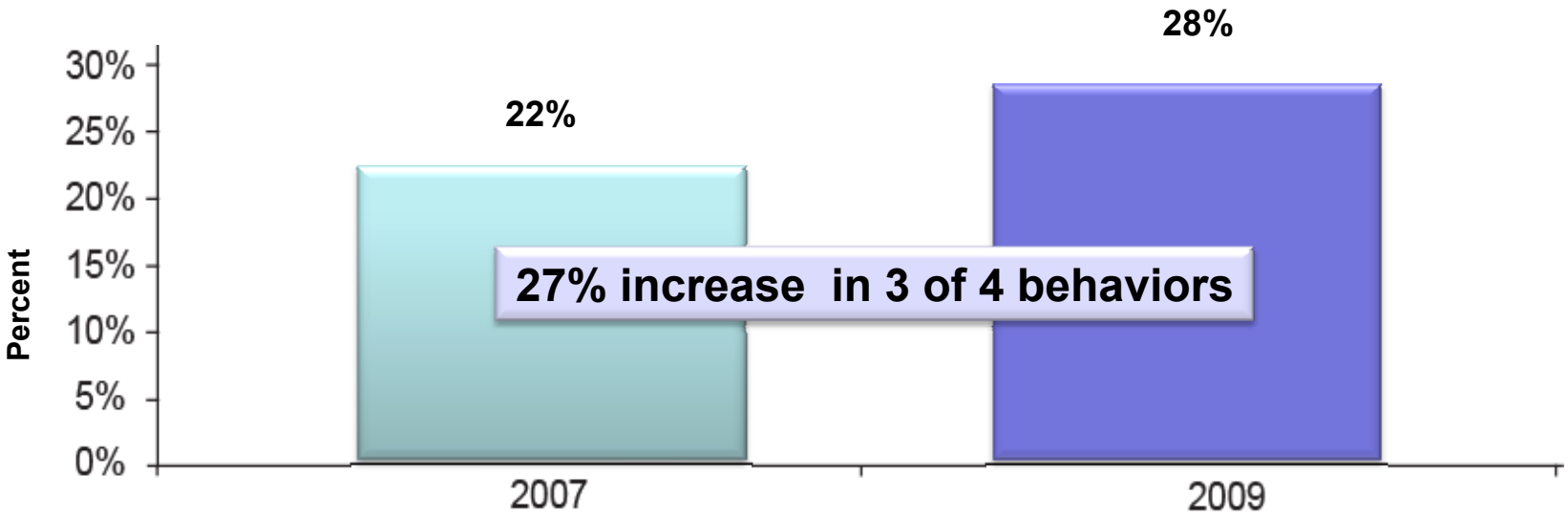
Perceived Behavioral Changes
Increased Awareness of *Let's Go!* and 5-2-1-0 in Greater Portland



Critical Insights RDD Telephone Survey, Spring 2009, n=800 parents in 12 communities in Greater Portland

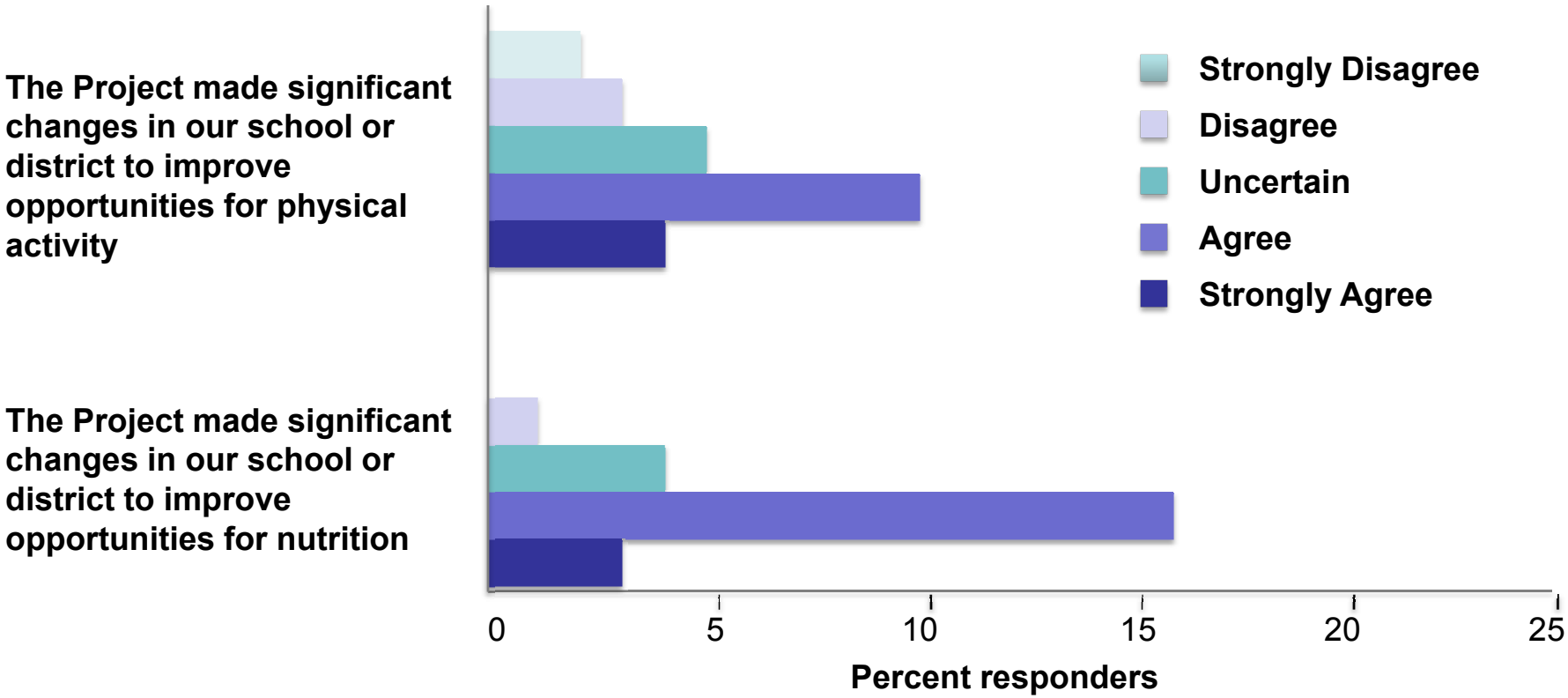
Perceived Behavioral Changes:
Parent-Reported 27% Child Behavior Change

- **Exposure across 3 or more settings**
  - Parents more likely to be aware of 5-2-1-0
  - Children more likely to meet the "1"
  - Parents more favorable to Let's Go! Message
  - Parents more likely able to identify all 4 healthy behaviors correctly



Critical Insights RDD Telephone Surveys, Spring 2007 and 2009, n=800 parents of children ages 0 to 18 in 12 communities in Greater Portland

Environmental and Policy Change
School Data from Administrators



Let's Go!/5-2-1-0 Goes to School 2008-2009 School administrator Feedback Survey, June 2009 (n=24)

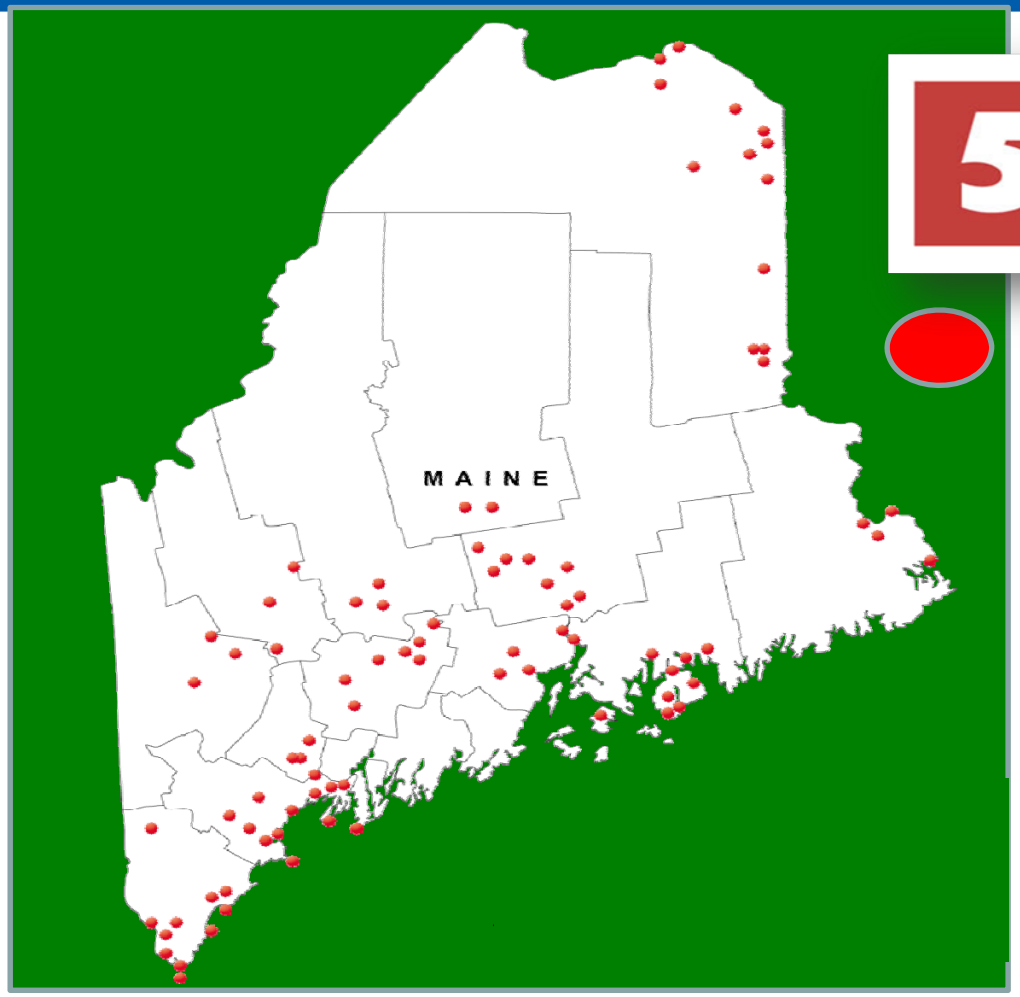
5-2-1-0 Goes to School

- **Progress made by implementing 5-2-1-0 strategies**
- **Schools appreciate**
  - Simplicity of the 5-2-1-0 message
  - Support from *Let's Go!*
  - Multisector approach
- **Critical role of school teams and the administrator**
- **Policy and environmental change is important to support long-term behavior change**

Let's Go! Statewide Reach
June 2010

- *83,439* students in *262* schools
- *40* child care sites caring for *thousands* of children
- More than *50* physician's practices
- Numerous after-school programs support more than *2,500* youth members
- *6* of Portland's largest employers
- *8 regions* across Maine

5-2-1-0 in Maine …



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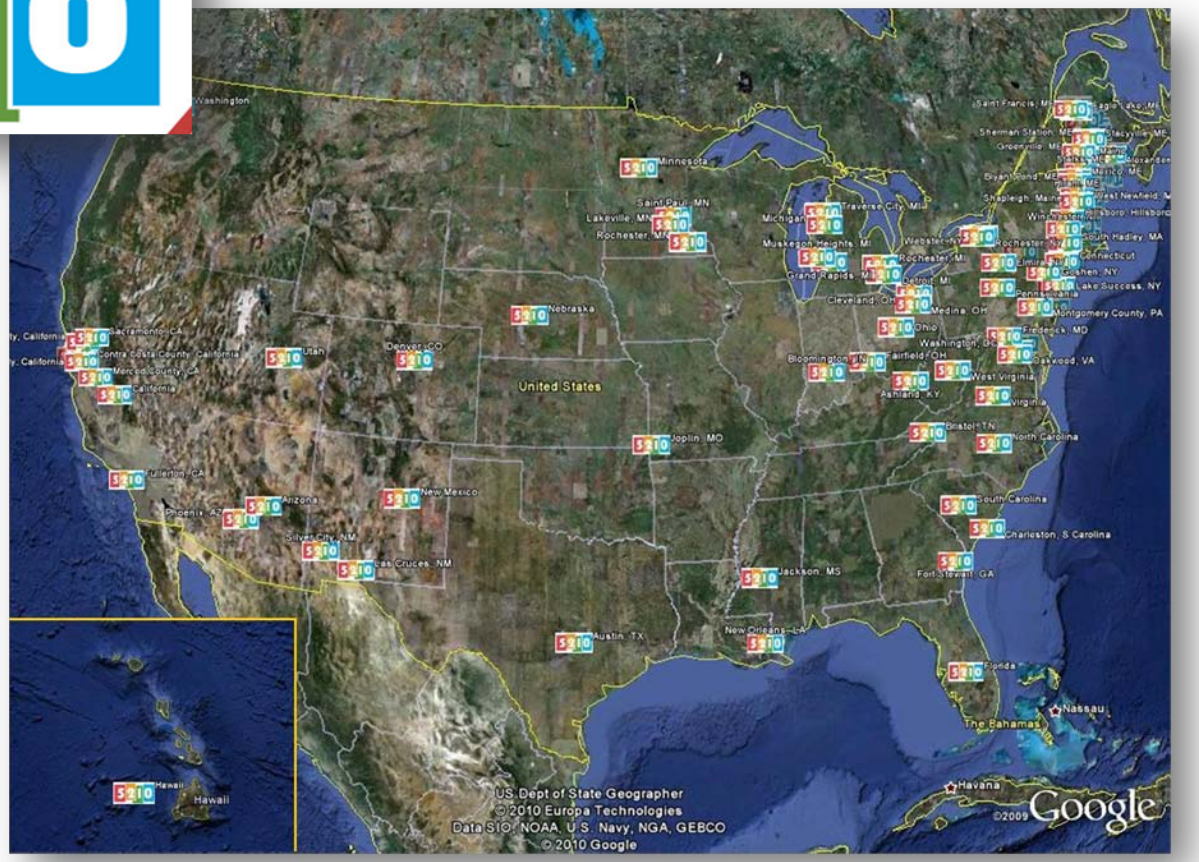
149 towns participating

… and Spreading Throughout the Nation



Outstanding Challenges

- Building the evidence is difficult
- Capturing "hard" data is difficult – changing kids' behavior and BMI takes years!

Outstanding Challenges

- Building the evidence is difficult
- Capturing "hard" data is difficult – changing kids' behavior and BMI takes years!
- **Community partners can be wary of "Research and Evaluation"**
- **Collaboration**
  - "Turf" issues often get in the way—need collaboration, not competition
  - Collaboration among organizations can be complicated by funder's competing agendas, timelines, and demands

Opportunities

- Small changes can happen quickly and they are making a difference
- Engaging all sectors allows different partners to come to the table without having them feel like they have to “own it all”
- Working in a small, rural state can often mean easy access to local and state leaders
- Collaboration with regional and national leaders brings positive attention and boosts staff morale – this is a long journey!

MAINE
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