



**A Story of Success in Cambridge,  
Massachusetts: Overweight rates are  
lower and fitness rates are higher**



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APHA, 11/05/07





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# Background on Cambridge

- Urban population of 101,355\*
- Public Schools:
  - Diverse: Over 100 countries represented
  - Languages: English, Spanish, Portuguese, Haitian Creole
  - Socioeconomic status
    - 47% of students are low income (qualify for NSLP free/reduced lunch program)
    - 54% of high school, and 44% of K-8 students live in public housing, compared with ~10% of Cambridge population
  - 12 Elementary Schools (K-8), 1 High School (9-12)
  - About 4300 k-8<sup>th</sup> grade students ('04) -- 3800 k-8<sup>th</sup> ('07)
  - K-8th grade: 2 45 minute PE classes per week

\*Sources: U. S. Census, Decennial Census, 1950 - 1970; STF1A data file, 1980; STF1A data file, 1990; SF1 data file, 2000.

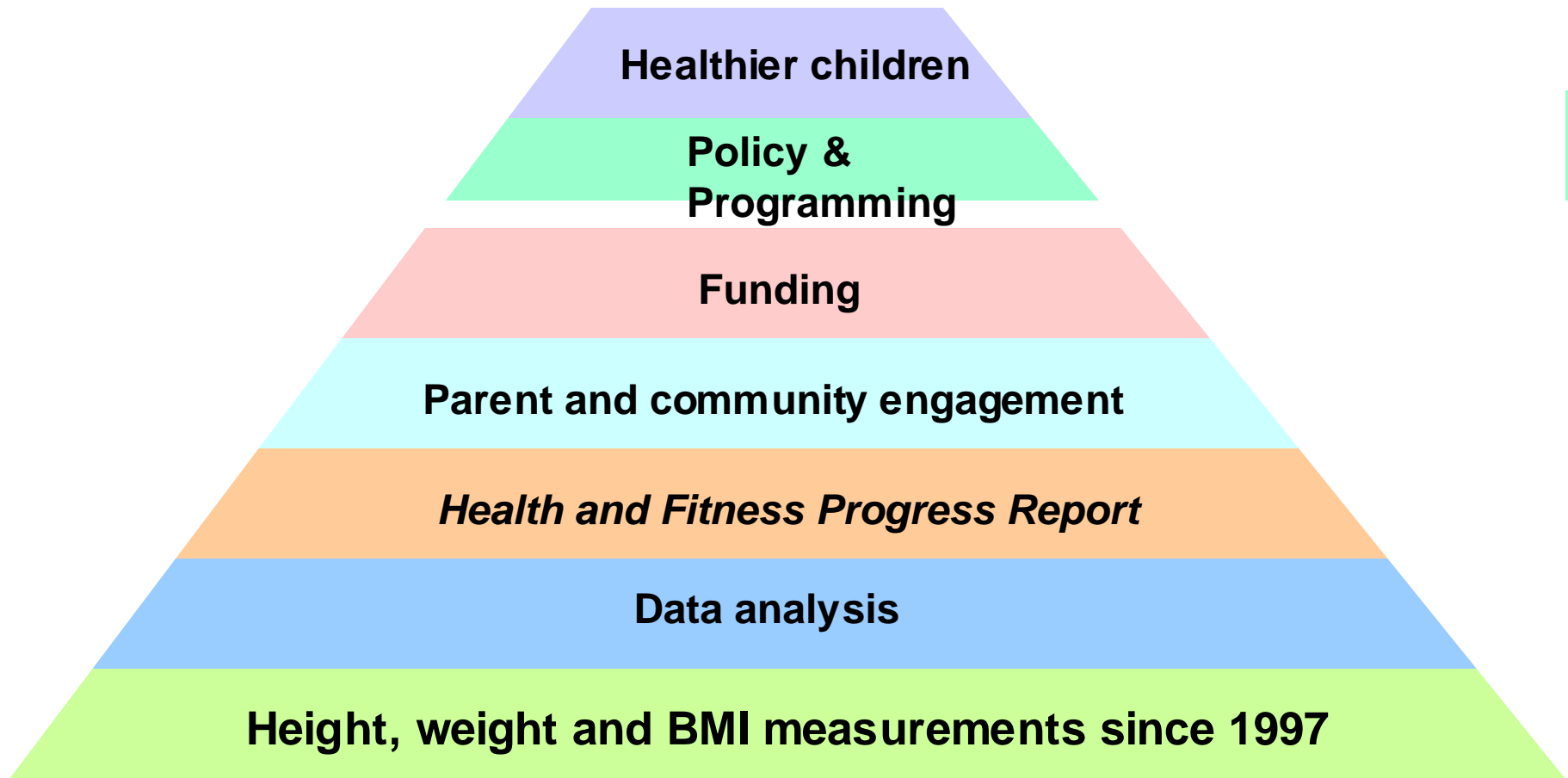


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# History of Cambridge Healthy Weight Work: Community Based Participatory Research



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# Methods for assessing weight and fitness status

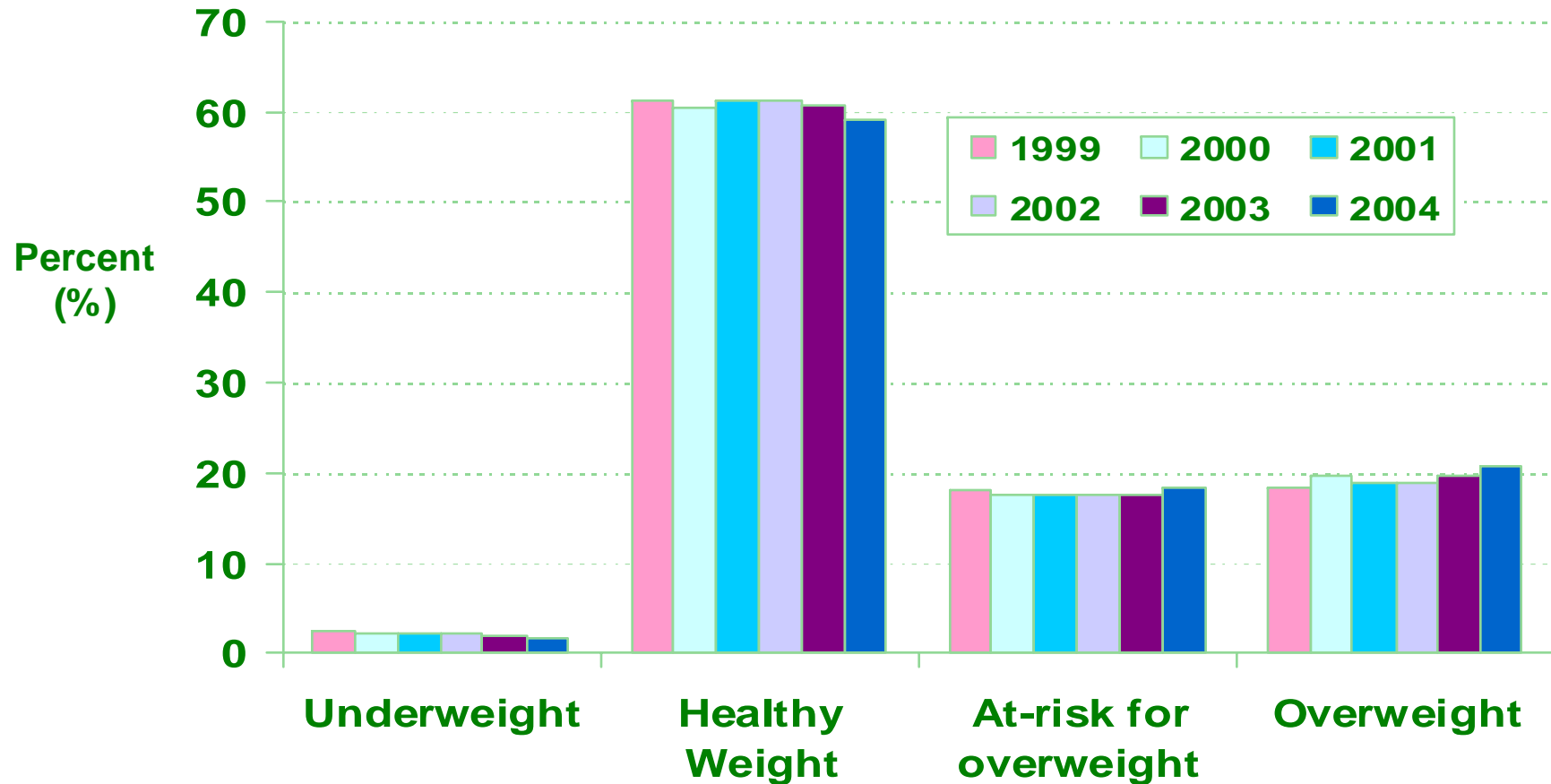
- Height and weight measures and fitness collected annually by PE teachers & school nurses in spring
  - All students unless parents opt out or out of school
- Fitness testing:
  - Endurance (shuttle run)
  - Upper body strength (flex arm hang)
  - Abdominal strength (sit & reach)
  - Flexibility
  - Agility
- PE teachers participate in annual anthropometry, fitness and sensitivity training
  - Reliability checked through separate study (2007)
- Measures recorded in Excel spreadsheet and converted to BMI-for-age percentiles (CDC/NCHS) and fitness scores (Cooper Institute & President's Fitness standards). Analyzed with SAS.



# Distribution of Weight Status 1999-2004

## *Before major healthy weight interventions*

Cambridge Public Elementary Schools, (K-8<sup>th</sup> Grades)

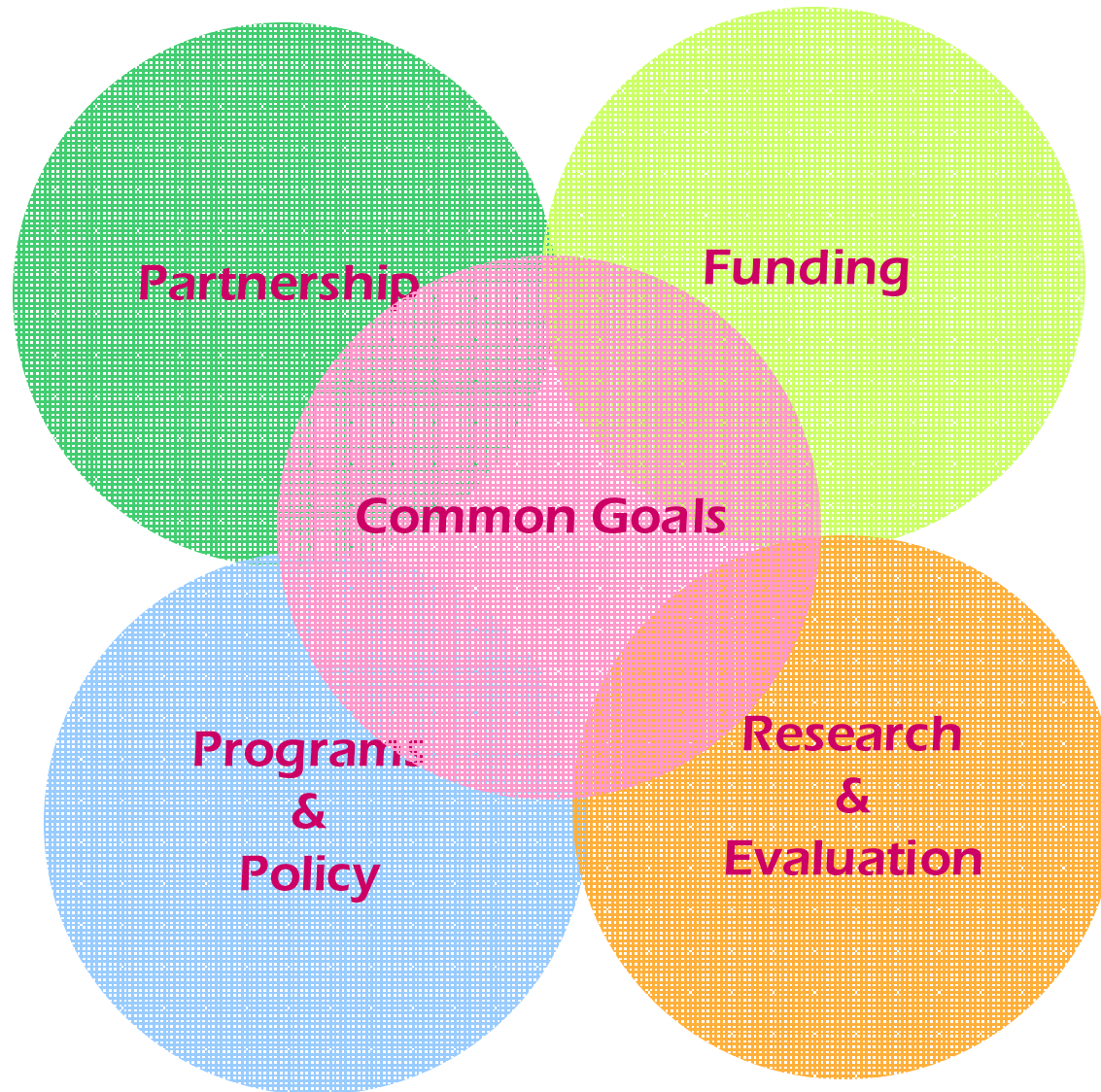


1999 n = 3884; 2004 n=4258

Note: Overweight defined as at or above 95th percentile; At risk of overweight as between 85th and 95th percentile; Healthy weight as between 5<sup>th</sup> and 85<sup>th</sup>; Underweight as less than 5<sup>th</sup> percentile for BMI from NCHS reference.

Date of data collection: Spring 1999-2004  
 Data Source: Cambridge Public Schools  
 Analysis and Presentation: ICH

# How we achieved our intervention success





# How we achieved our intervention success

## Partnership and Collaboration

**Cambridge Public School Dept.**

**Physical education, food service, health education, professional development**

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**Research, evaluation, education, dissemination, policy**

**Cambridge Public Health Dept.**

**School health department, community health programs, campaigns**

**Cambridge Health Alliance**

**BMI tracking, pediatric nutrition consultation and follow-up**

**Community Partners**

**CitySprouts gardening program, Federation of Massachusetts Farmers' Markets, Concilio Hispano**

**Cambridge Dept. of Human Service Programs**

**Recreation facilities, summer food program, Community Schools**

**Healthy Children Task Force**

**Policy development, networking**



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## How we achieved our intervention success

# Funding and Resource Development

U.S. Dept. of Ed.	Physical Education for Progress	\$1.5 million	2004-2007
USDA Community Food Program	Growing Healthy Farm-to-School-to-Home	\$300,000	2005-2008
Blue Cross Blue Shield of MA	Healthy Choices	\$50,000	2005-2008
MA Dept. of Public Health	Tasty Choices, Fitness Buddies	\$15,000	2006
U.S. Dept. of Health and Human Services	Latinas Living Better	\$95,000	2007



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# How we achieved our intervention

success

## Common Goals: Healthy Weight & 5-2-1

- **Increase healthy eating**

- **Decrease physical inactivity**

- **Increase physical activity**

- ✎ At least **FIVE** servings of fruits & vegetables every day

- ✎ **FEWER** sugar sweetened beverages

- ✎ Maximum of **TWO** hours of TV or video games per day

- ✎ At least **ONE** hour of moderate to vigorous activity every day



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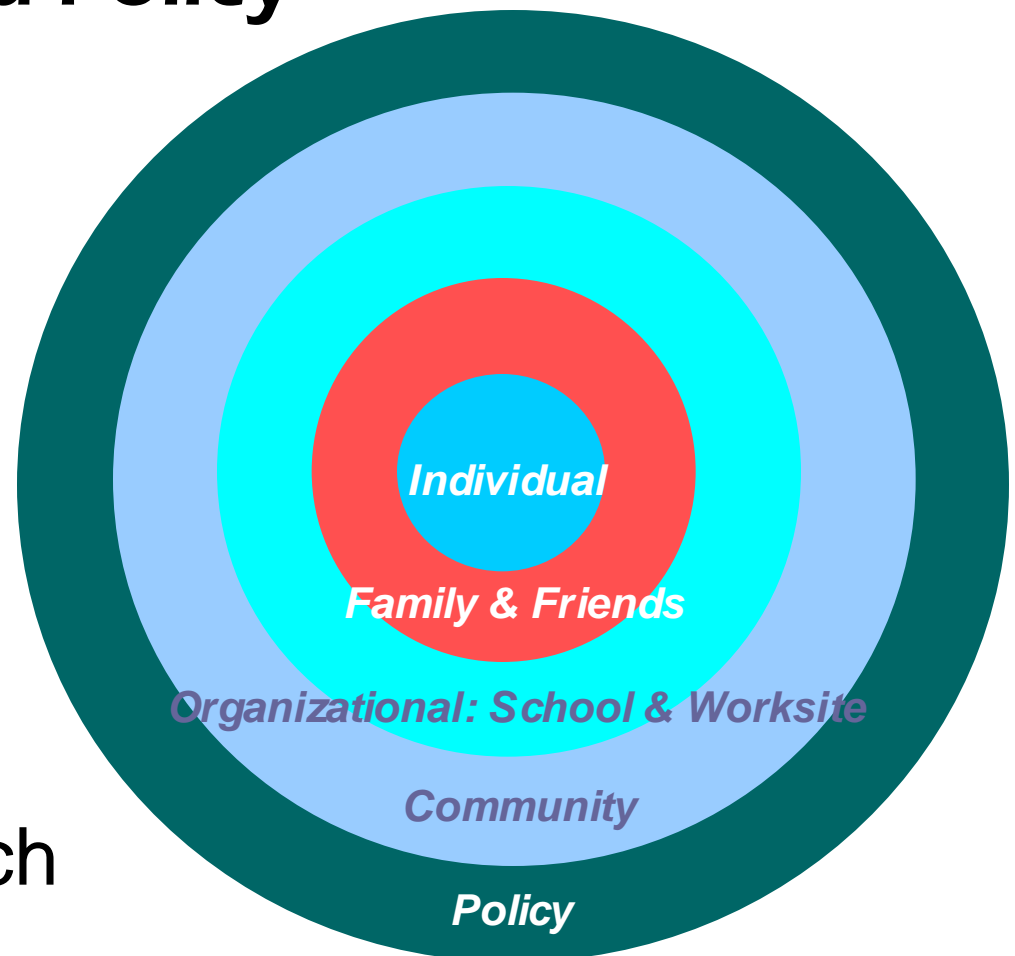




## How we achieved our intervention success

# Programs and Policy

- Healthy weight
- Fitness
- Physical education
- Healthy eating
- Family outreach
- School health
- Community outreach
- Policy



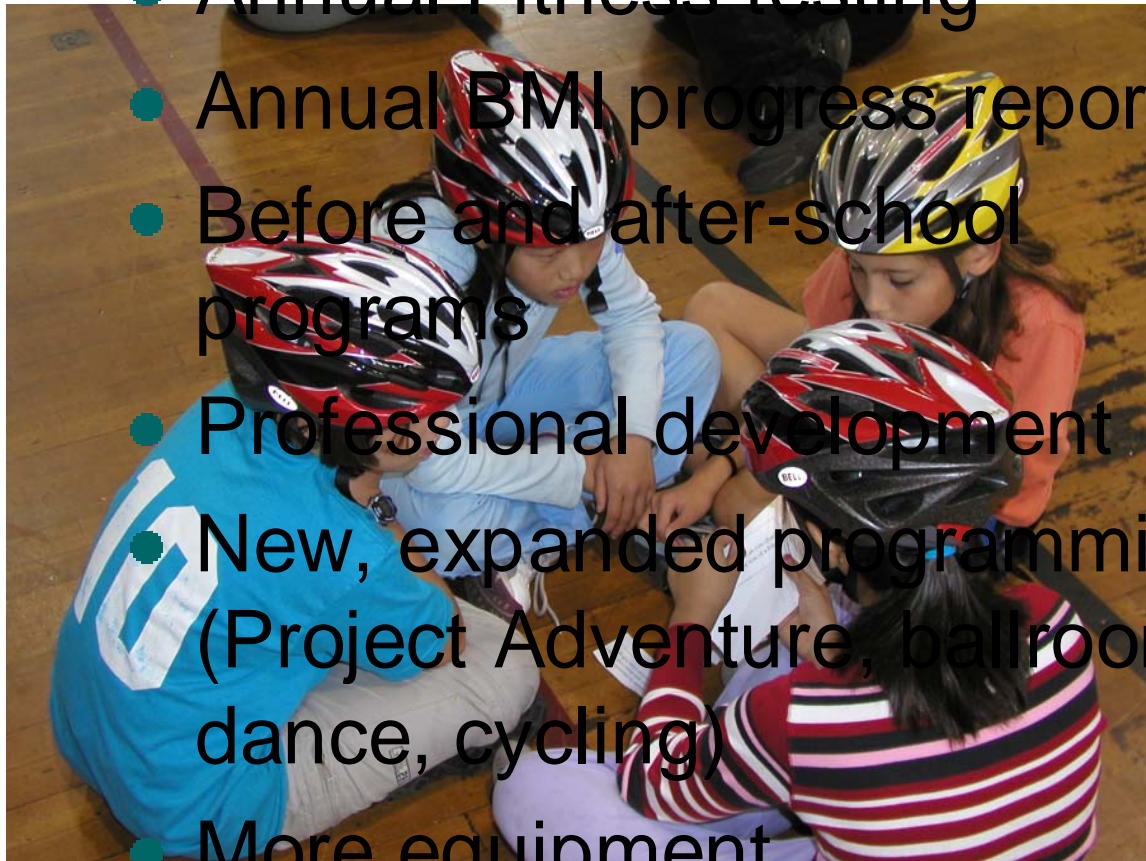
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# School Fitness and Physical Education

- Annual Fitness testing
- Annual BMI progress reports
- Before and after-school programs
- Professional development
- New, expanded programming (Project Adventure, ballroom dance, cycling)
- More equipment



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# Healthy Eating in School

## ● Food service reforms

- More healthy foods offered
- Menu and recipe development
- Fruit and vegetable promotion
- Taste testing

## ● Growing Healthy Farm to School Activities

- Local produce, farmer visits, farmers' market events
- CitySprouts school gardens



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# How we achieved our success

## Research and Evaluation

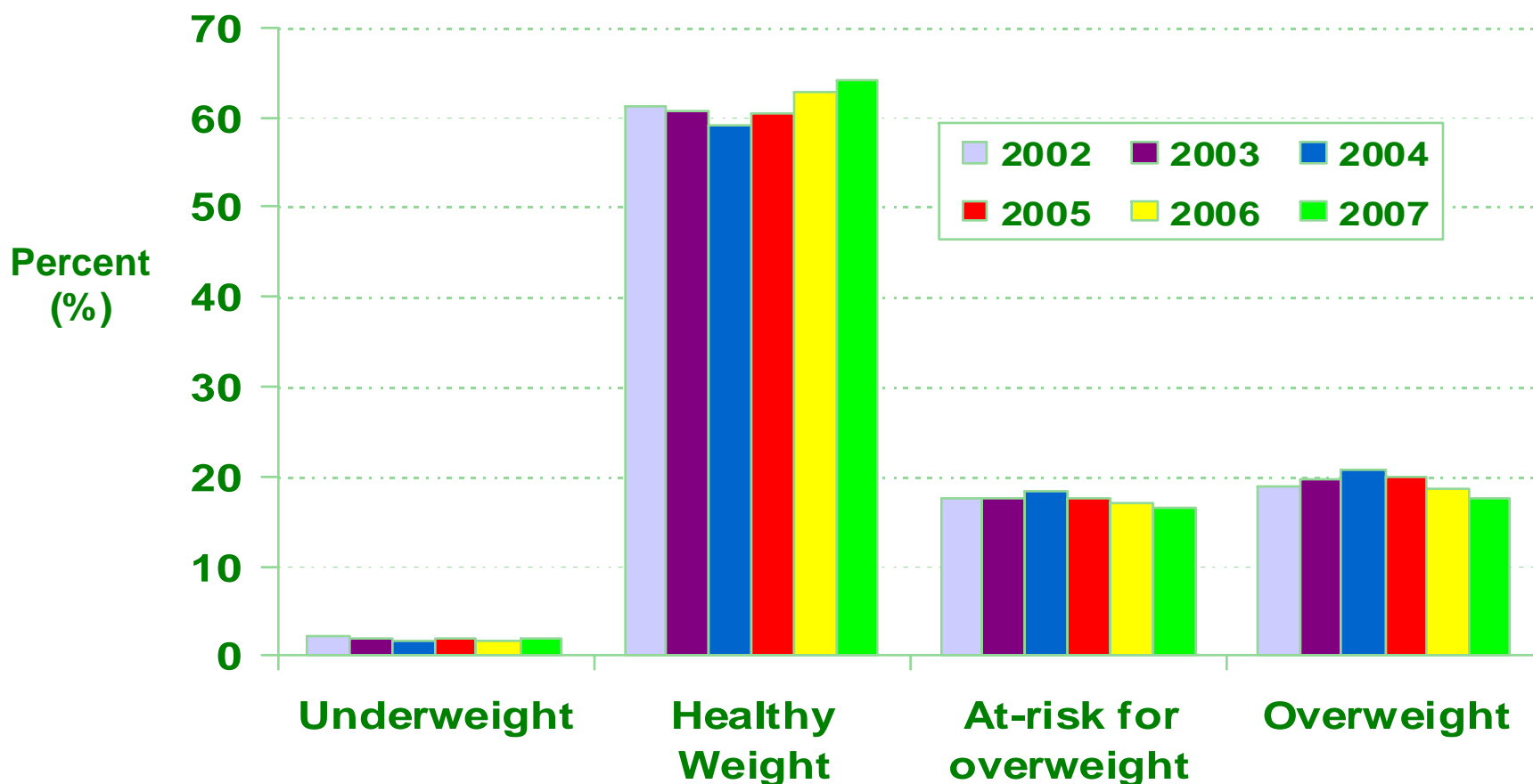


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# 2002-2007 Distribution of Weight Status

## Cambridge Public Elementary Schools, (K-8<sup>th</sup> Grades)



n = 4616 in 2002; 4258 in 2004 and; 3744 in 2007

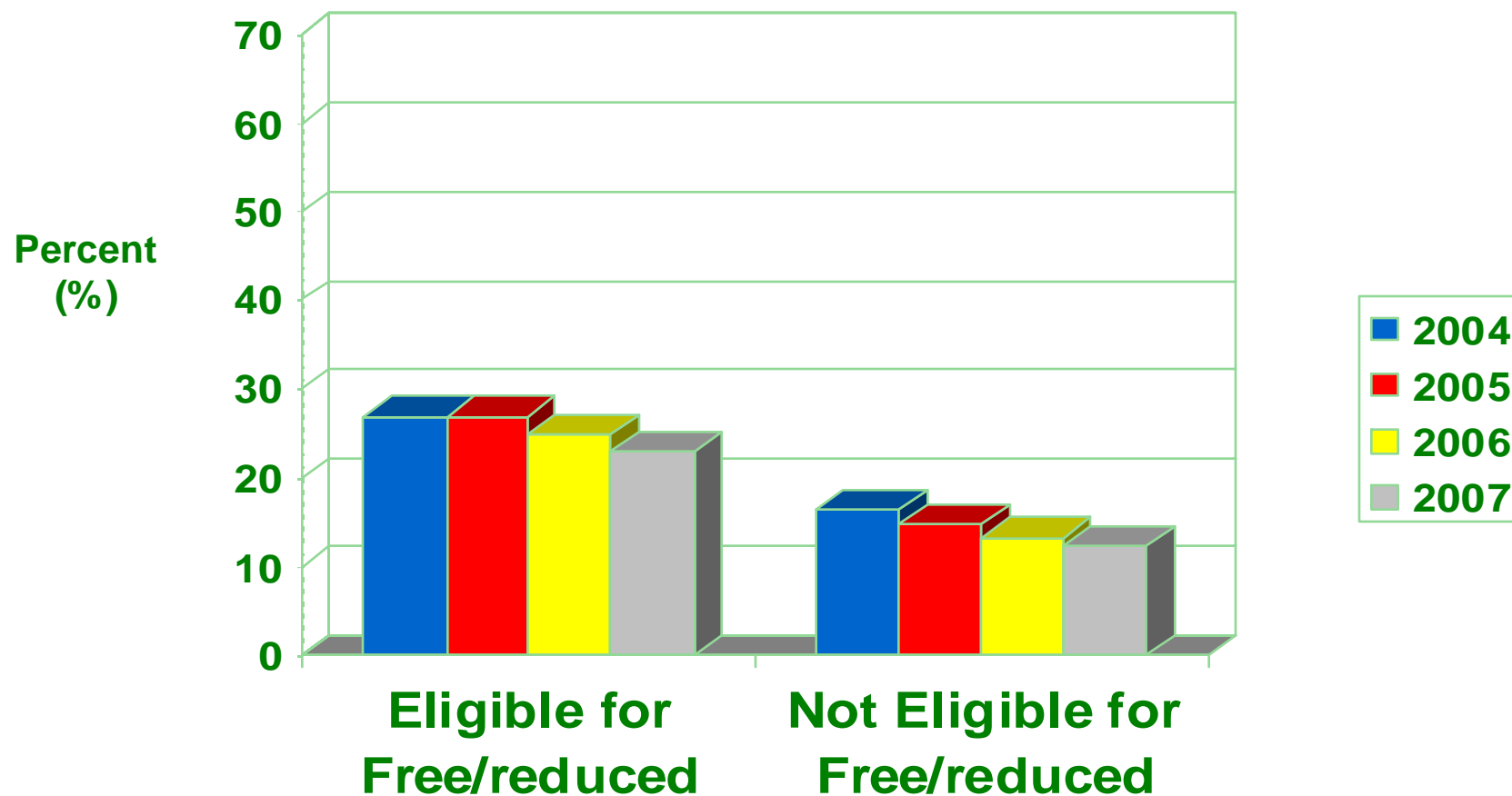
Note: Overweight defined as at or above 95<sup>th</sup> percentile; At risk of overweight as between 85<sup>th</sup> and 95<sup>th</sup> percentile; Healthy weight as between 5<sup>th</sup> and 85<sup>th</sup>; Underweight as less than 5<sup>th</sup> percentile for BMI from NCHS reference.

Date of data collection: Spring 2002-2007  
 Data Source: Cambridge Public Schools  
 Analysis and Presentation: ICH



# 2004-2007 Distribution of Overweight by Socioeconomic (Lunch) Status

Cambridge Public Elementary Schools, (K-8th Grades)



n = 3,774 in 2007

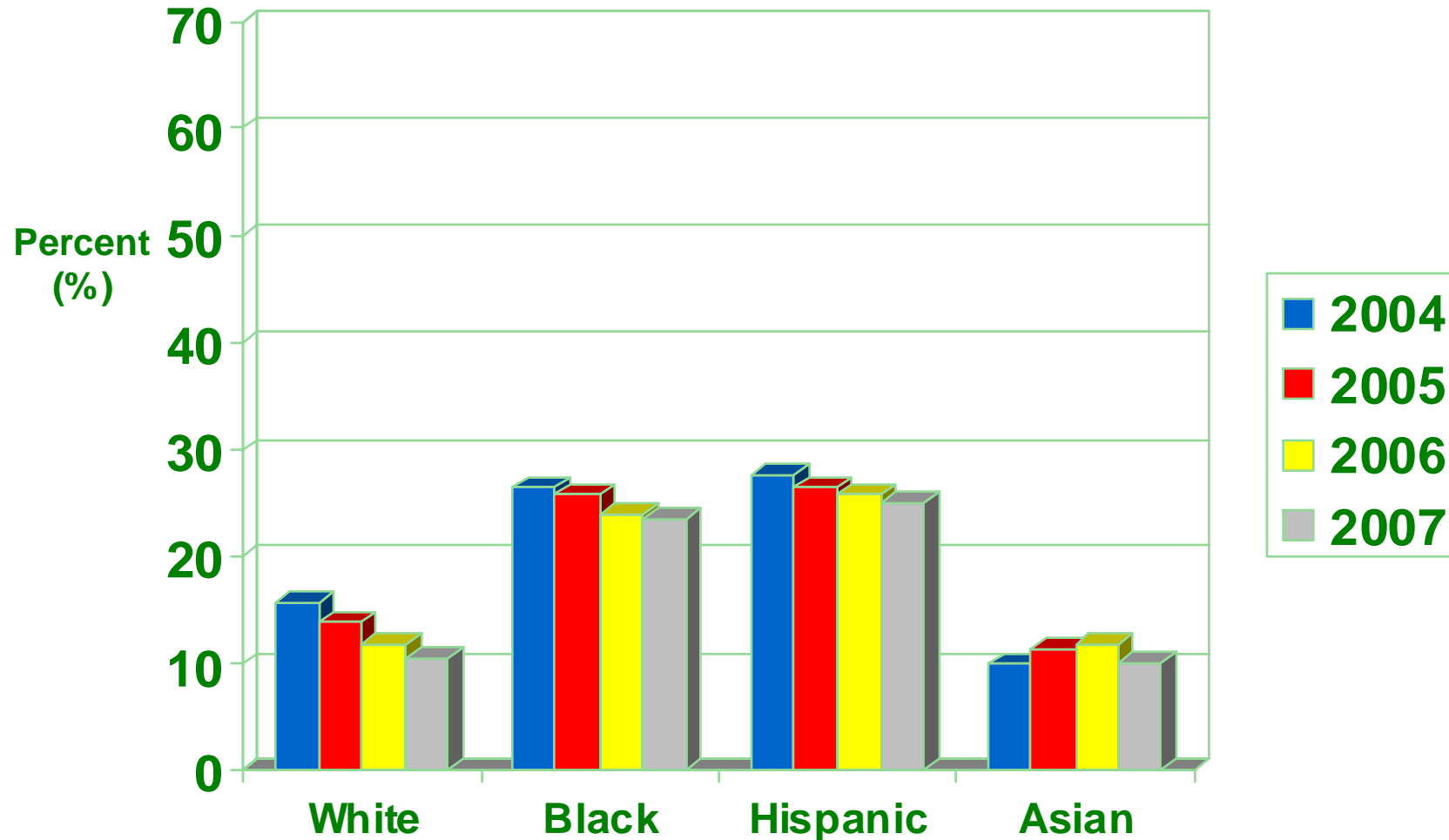
Note: Overweight defined as at or above 95th percentile

Date of data collection: Spring 2004-2006  
Data Source: Cambridge Public Schools  
Analysis and Presentation: ICH



# 2004-2007 Distribution of Overweight by Race/Ethnicity

Cambridge Public Elementary Schools, (K-8th Grades)



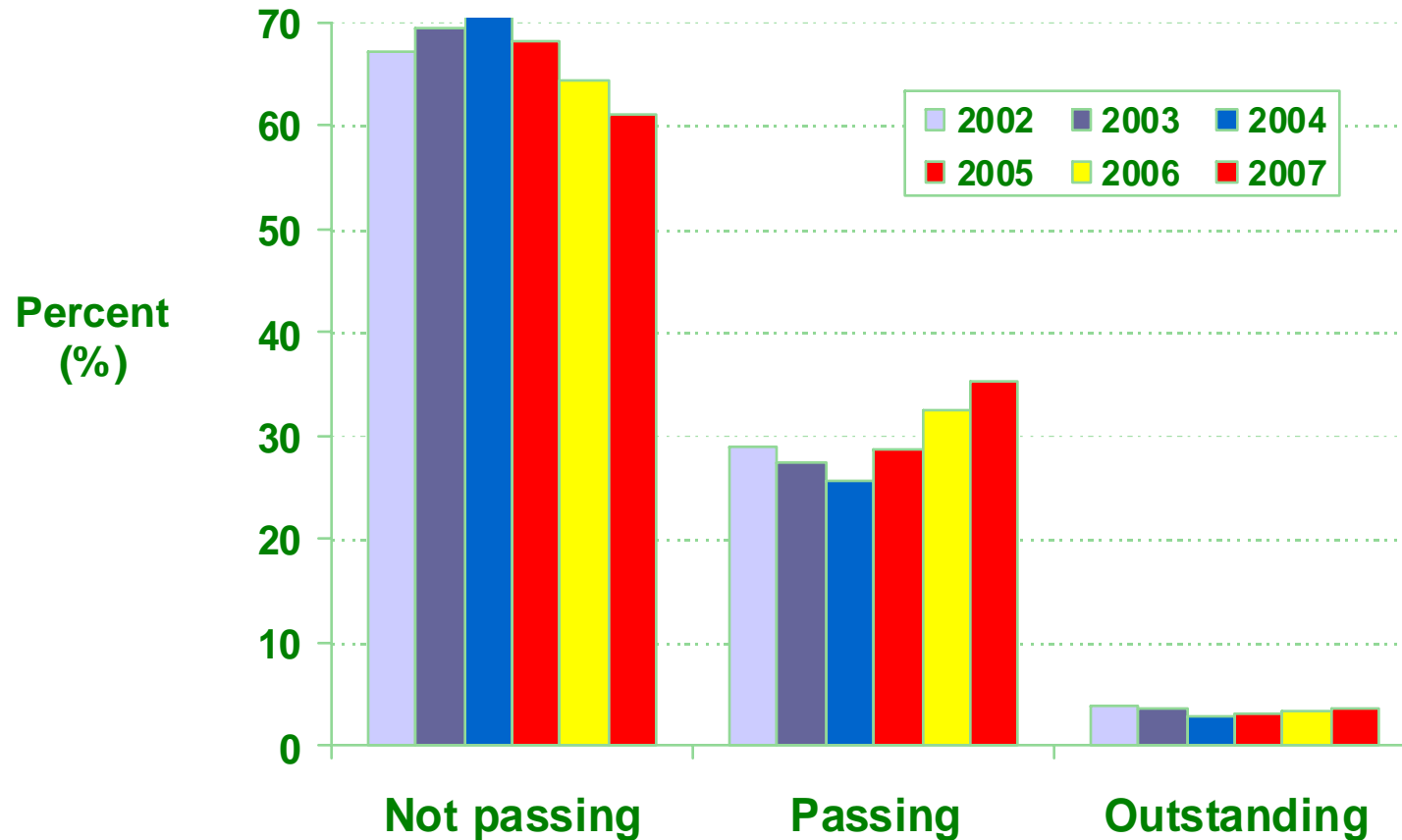
n = 3,744 in 2007

Note: Overweight defined as at or above 95th percentile

Date of data collection: Spring 2007  
Data Source: Cambridge Public Schools  
Analysis and Presentation: ICH

# 2002-2007 Fitness Test Results (Overall Score)

Cambridge Public Elementary Schools, (K-8th Grades)



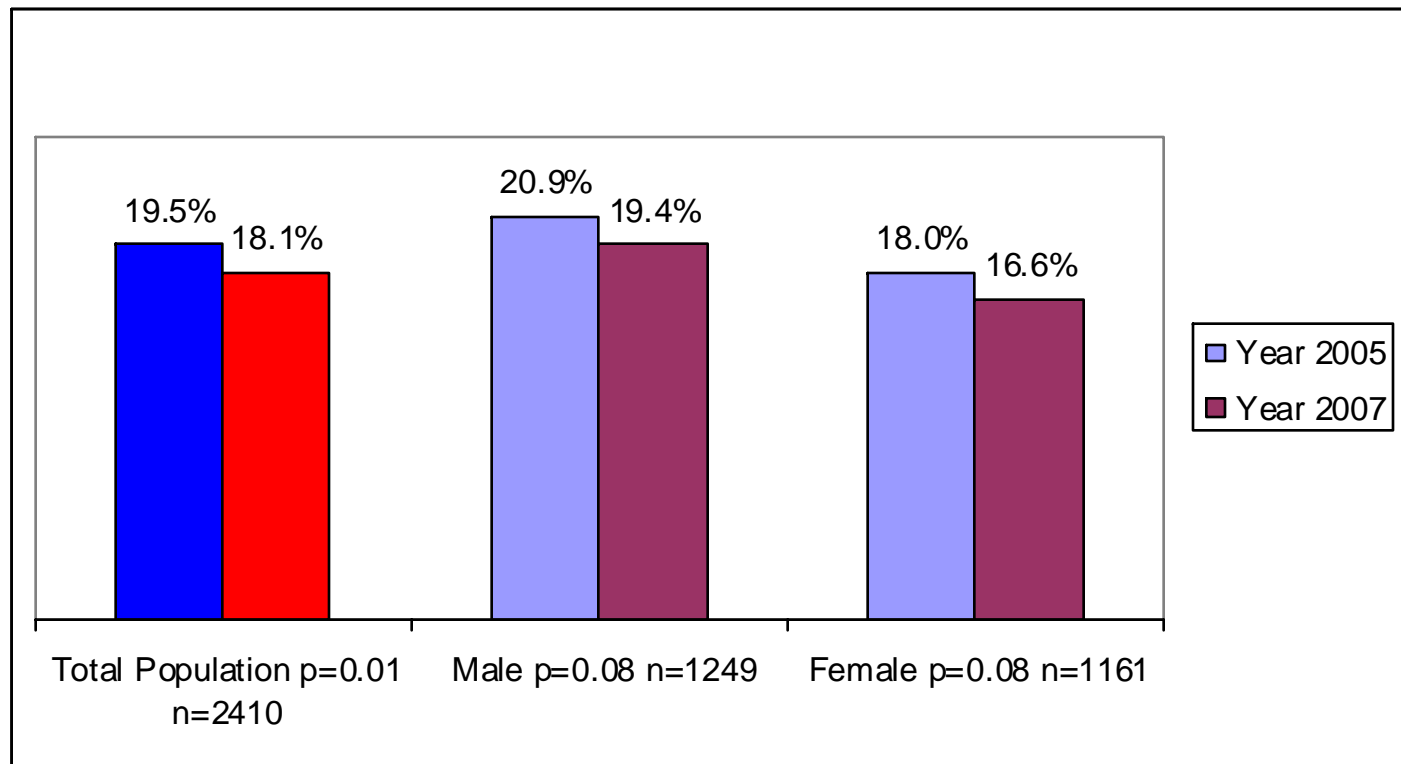
n = 3,924 in 2007

Note: "Not Passing" = Participant"; "Passing" = Attainment; and "Outstanding" is defined as passing with an above average score

Date of data collection: Spring 2002-2007  
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Analysis and Presentation: ICH



# 2005 vs. 2007 Change in Weight Status Overall and by Gender (Preliminary Results) Cambridge Public Elementary Schools, (K-8<sup>th</sup> Grades)



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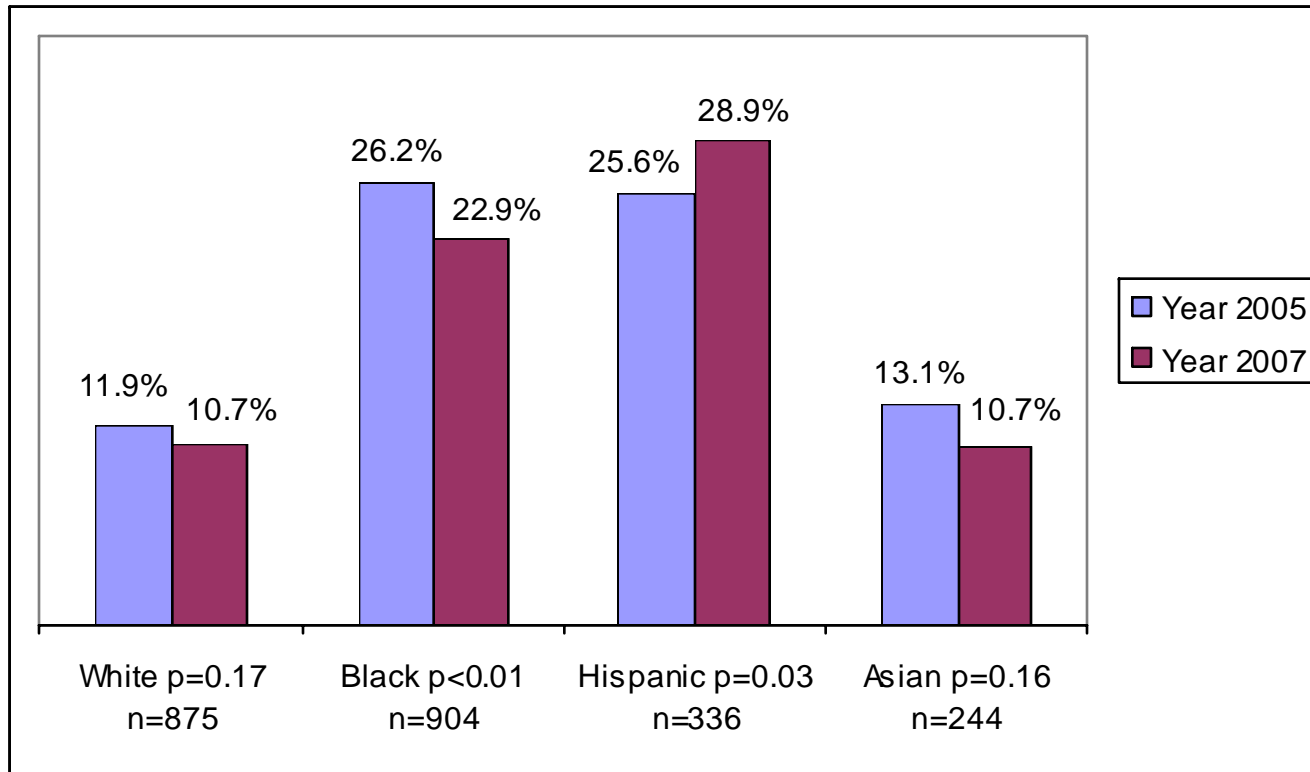


# 2005 vs. 2007 Change in Weight Status

by Race/Ethnicity

(Preliminary Results)

Cambridge Public Elementary Schools, (K-8<sup>th</sup> Grades)



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# Strengths and Caveats

- Strengths:
  - Many years of census data
  - Diverse pool of students
  - Lay, but trained data collectors (PE teachers)
- Weaknesses:
  - Dynamic student population
  - Lay data collectors



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# Why Our Work is Relevant

In 2007, 17% (643 Cambridge Public School children) are overweight & another 17% (623 children) are at-risk of overweight



In 2004, 21% (887 Cambridge Public School children) were overweight & another 18% (781 children) were at-risk of overweight



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# Conclusions

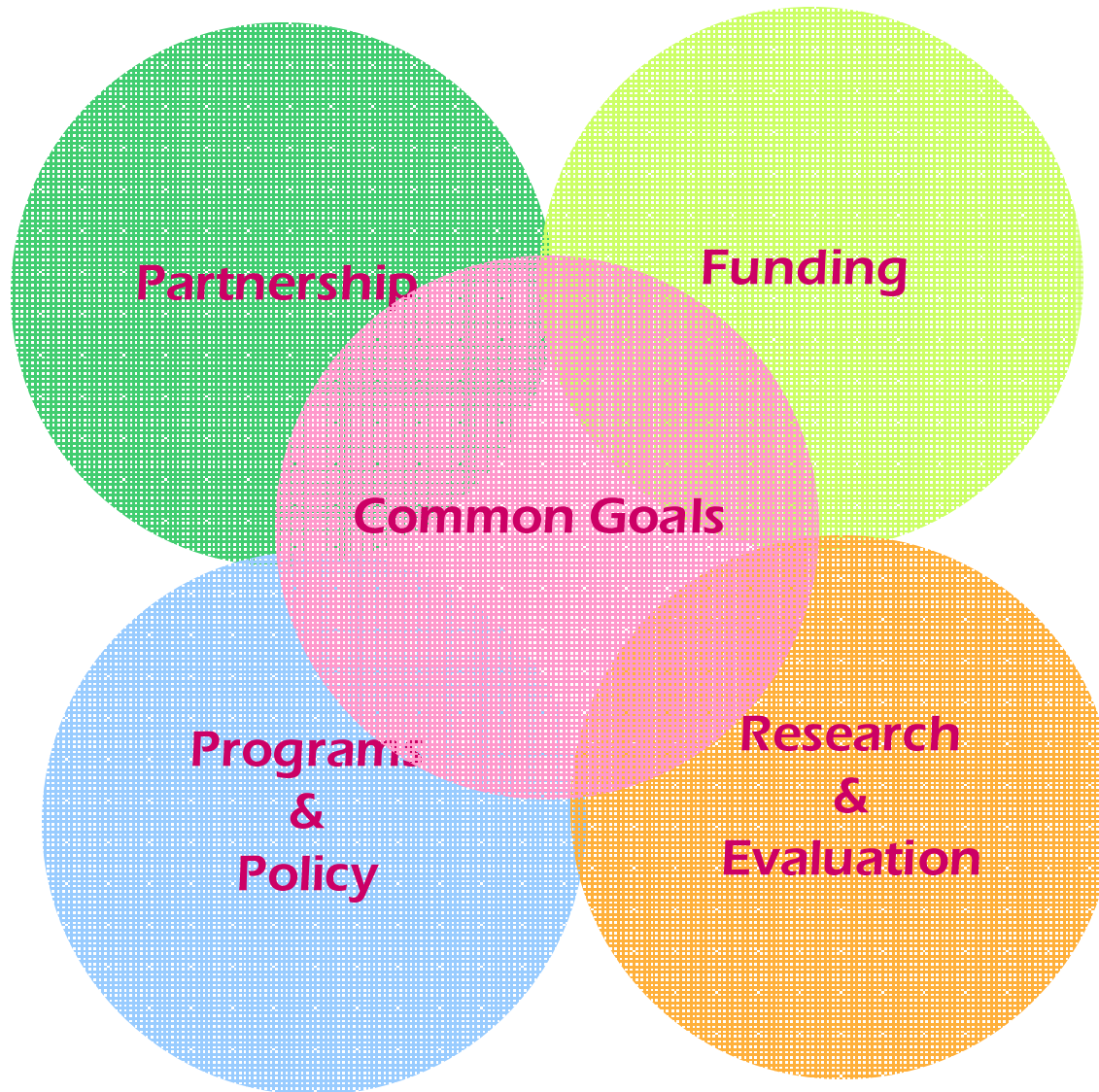
- Community Based Participatory Research (CBPR) effective for health improvement
  - Partners can come together “organically” to implement significant interventions
  - Significant decrease in overweight concurrent with interventions
- Future plans
  - Longitudinal data analysis chronicling natural history of BMI among children in a system undergoing intervention



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# Healthy, Successful Kids: What it takes





5 servings of fruits  
and vegetables



2 hours or less of  
TV or screen time

1 hour of  
physical activity



Every Day!

It all adds up to  
healthy living.

HealthyLiving  
Cambridge

A program of the Cambridge Public Health Department

[www.cambridgepublichealth.org](http://www.cambridgepublichealth.org)

## THANK YOU

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