

Jennifer Sacheck, PhD, FACSM

Friedman School of Nutrition Science & Policy

Tufts University

U N D E R S T A N D I N G B O S T O N

Active Bodies, Active Minds

A Case Study on Physical Activity and
Academic Success in Lawrence, Massachusetts

Prepared by:
The Friedman School of Nutrition Science & Policy, Tufts University
for
The Boston Foundation



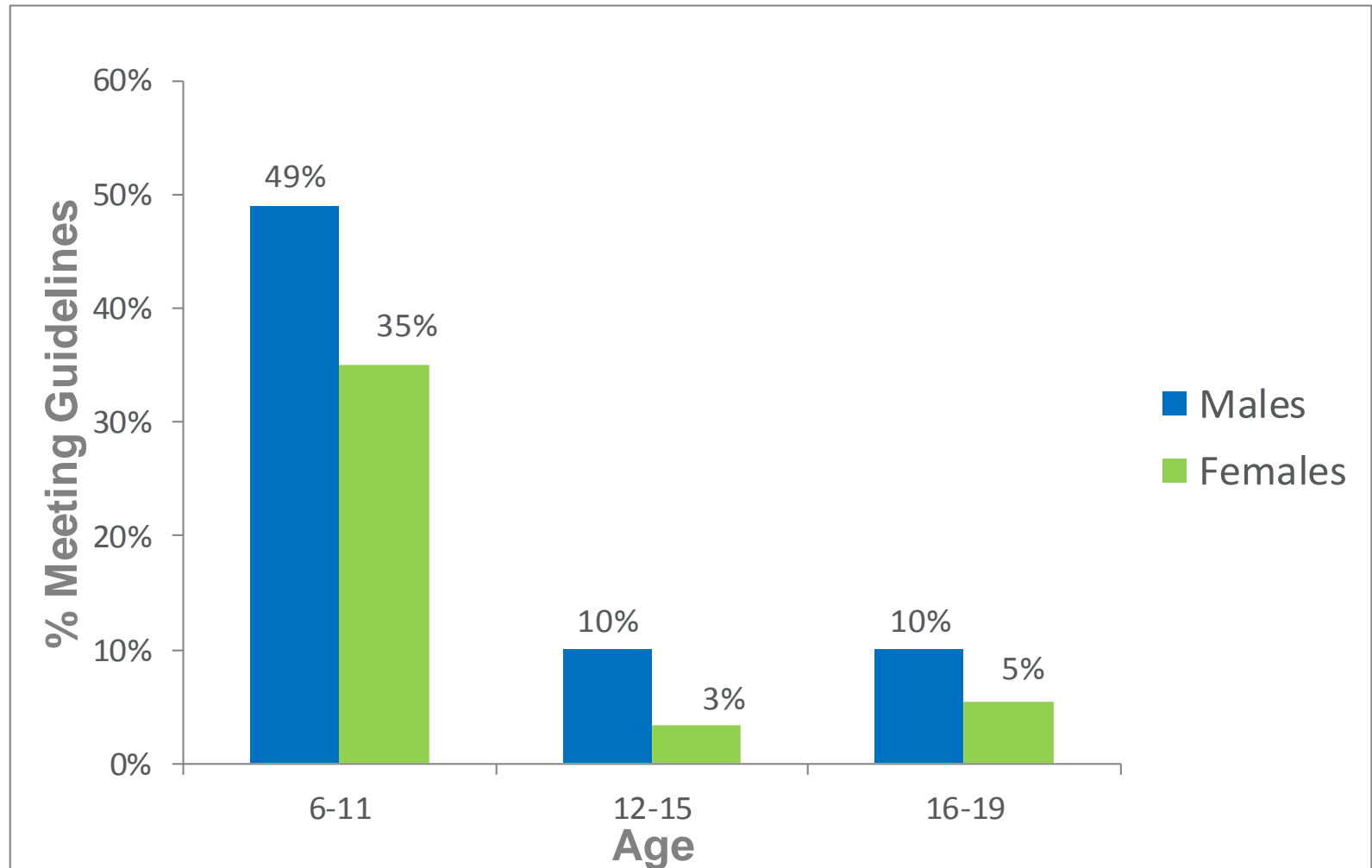
January 2015

Physical Activity Guidelines for Youth

*Children and adolescents should engage in **60 minutes or more** of physical activity daily.*



Youth Meeting Daily Physical Activity Guidelines

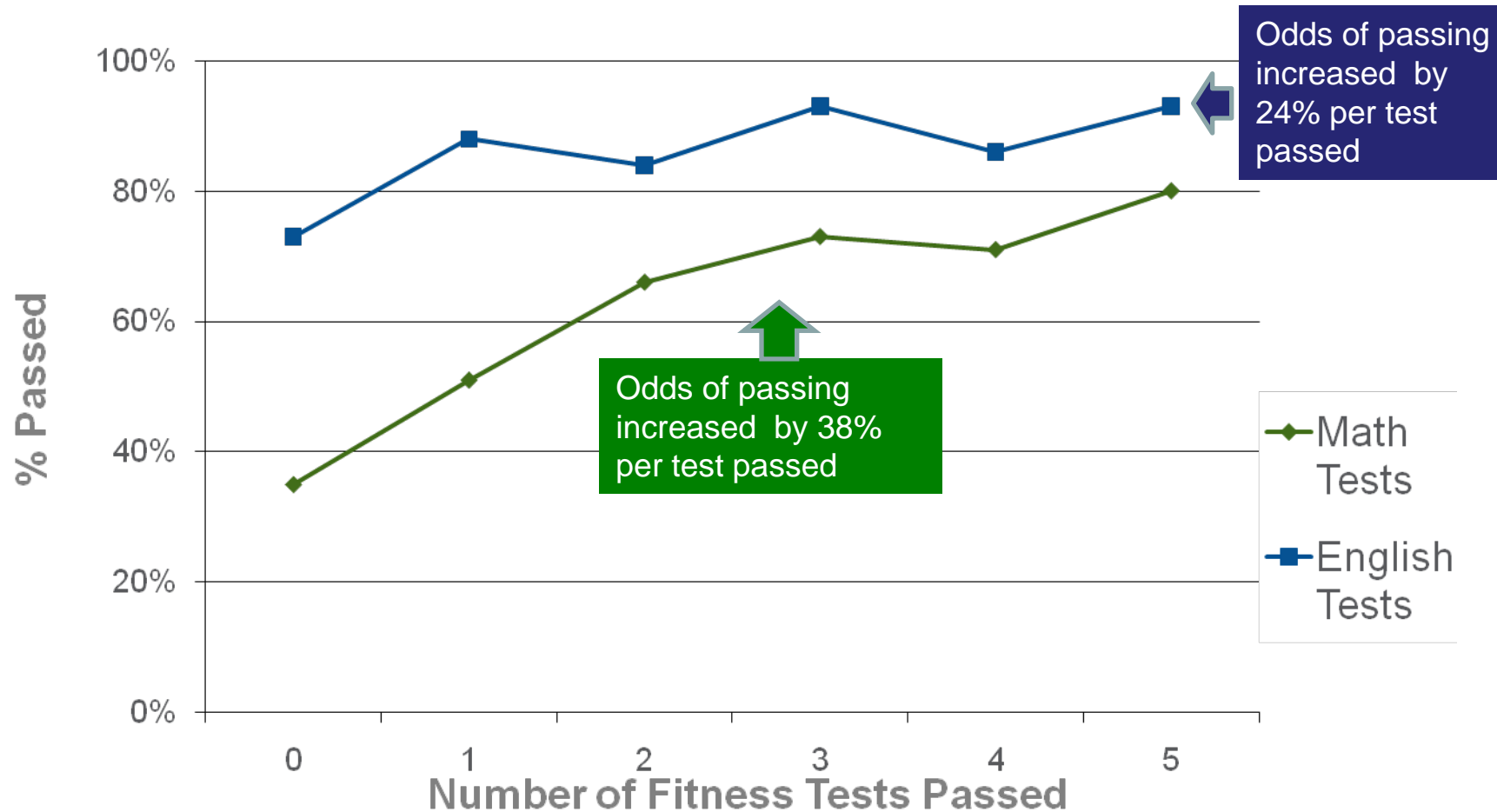


Daily *School-time* Physical Activity Guidelines

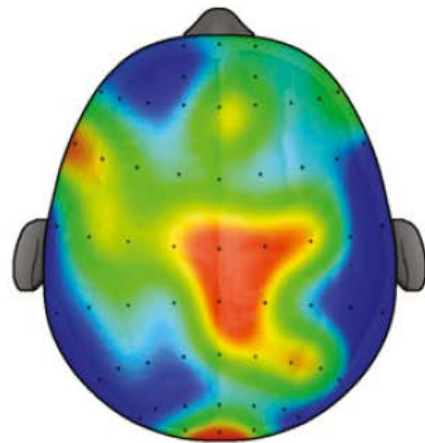
- **30 minutes** of physical activity within schools
- IOM called for a “whole school” approach
- Engage the “school environment”
 - Teachers
 - Administrators
 - Health Educators



Likelihood of Passing Academic Tests For Each Fitness Test Passed by Massachusetts Students in Grades 4 to 8

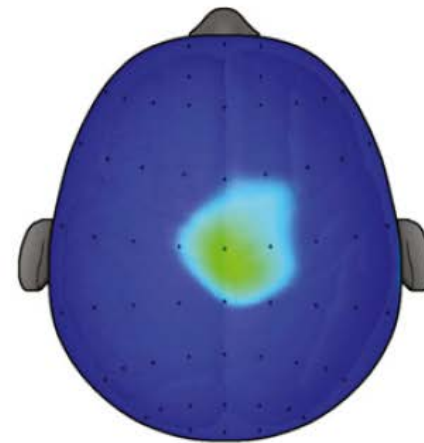


Kids' Brains on Exercise

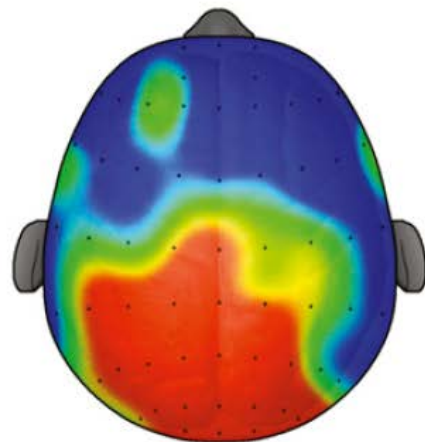


Intervention

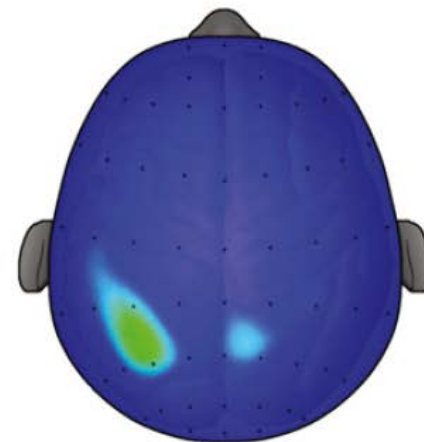
Flanker Task
Incongruent
Trials



Wait-list



Switch Task
Heterogeneous
Trials



Why Lawrence?

- 90% Hispanic
- 85% Low-income households
- 45% Overweight/obese
- Among 6th graders, 61% and 58% fall into “failing” or “needs improvement” on MCAS Math and English, respectively
- Under receivership and open to looking at new models for improvement



Research Goals



Aim 1: To evaluate the amount of physical activity children engage in daily and during school hours.

Aim 2: To evaluate whether schools with more supportive PA environments (programming/policies) are associated with:

- greater school-time and total daily physical activity
- better academic outcomes in schoolchildren

Population



- 3rd-6th graders (n= 451)
- 8 Elementary/Middle Schools in Lawrence, MA
- Data Collection (Spring 2014)
 1. Height and Weight
 2. Physical Activity
 3. Parent Report on:
 - Eligibility for free/reduced price lunch
 - Maternal education
 - Report of difficulty with “learning, understanding, or paying attention” or currently on an IEP
- MA Department of Elementary and Secondary Education
 - 2013 & 2014 MCAS Scores (Math & English Language Arts)
 - 2013 & 2014 Attendance

Physical Activity Assessment



Physical Activity Measurement



Activity Monitors/Accelerometers

- Assess the acceleration of the body in one or more planes of movement
- Children assessed over 7 days
 - Collected data on moderate-to-vigorous physical activity
 - School-time
 - Total Daily
 - 3 Valid wear days for ≥ 10 hrs

The State of Activity

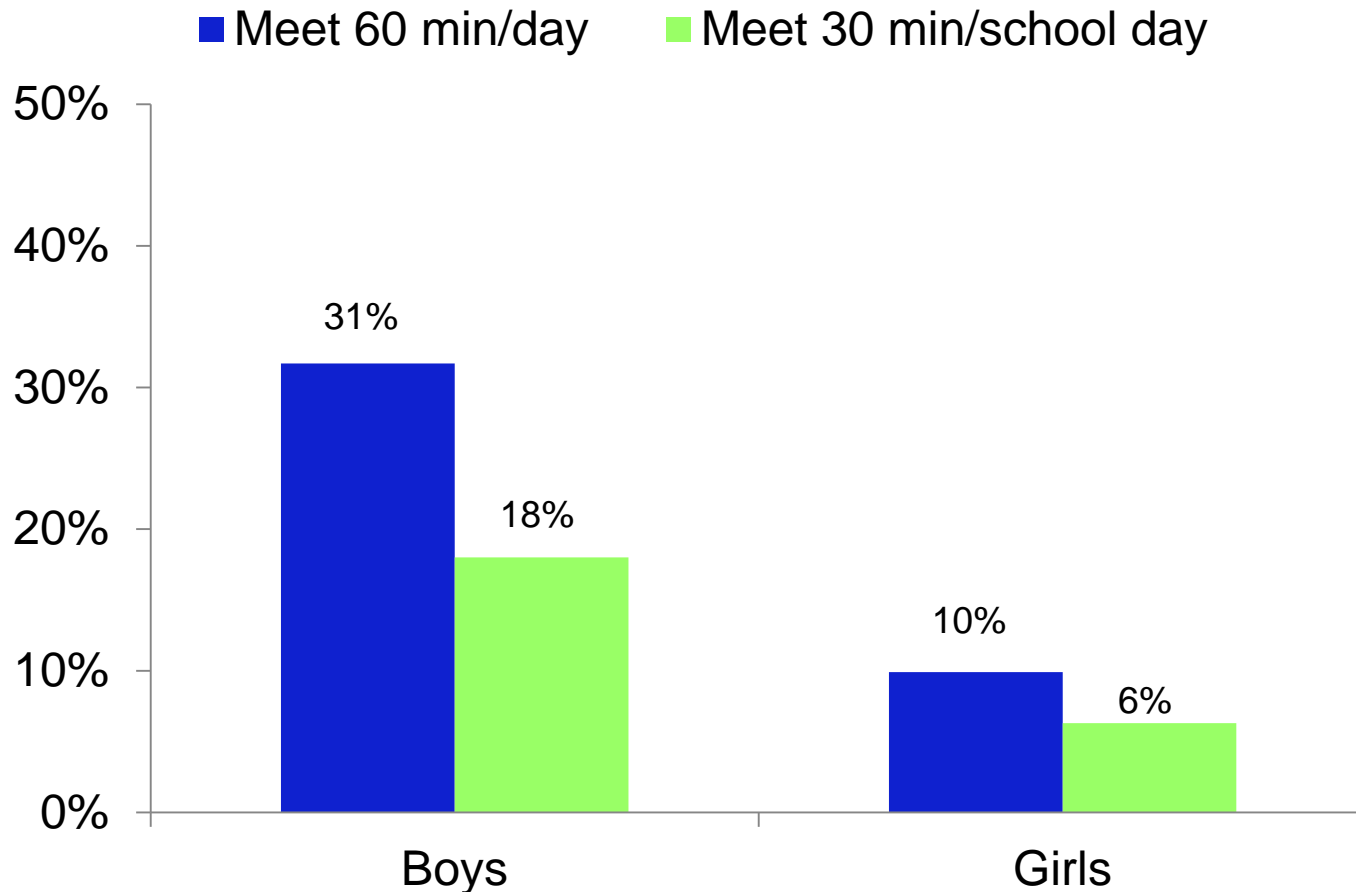


% Meeting Recommendations for Physical Activity

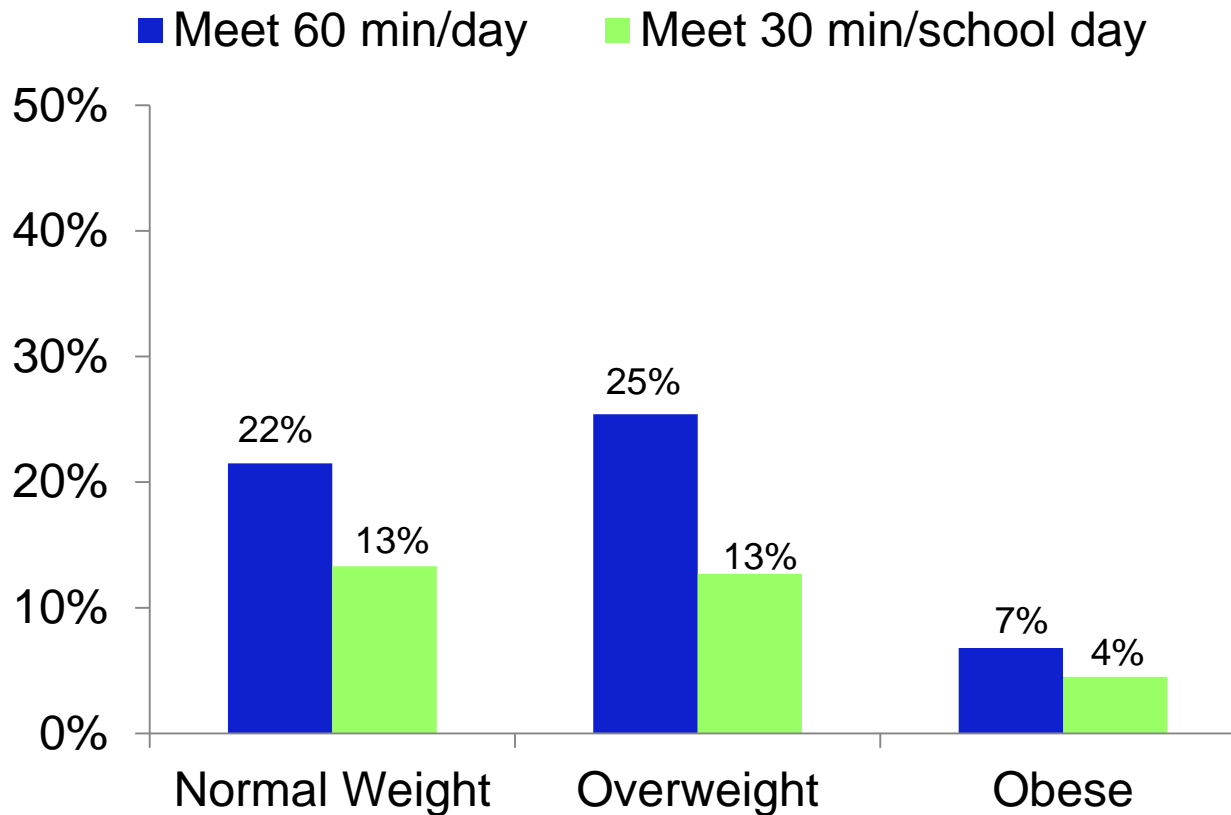
- 16% of students met 60 min/day daily recommendation
- 10% meet the 30 min/day in-school recommendation

Significant gender & weight status disparities

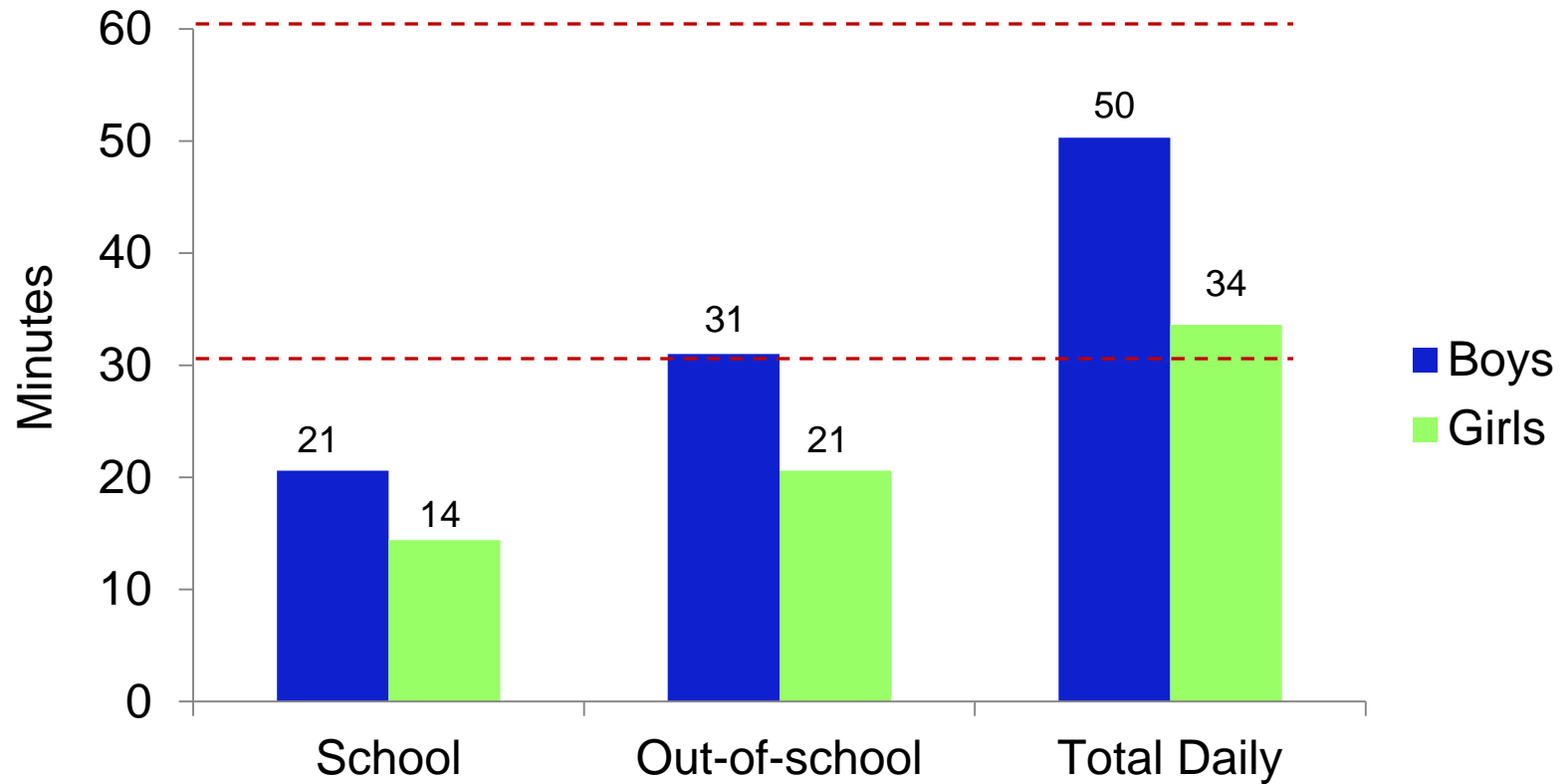
Disparities by Gender in Meeting School- and Daily Physical Activity Recommendations



Disparities by Weight Status in Meeting School- and Daily Physical Activity Recommendations



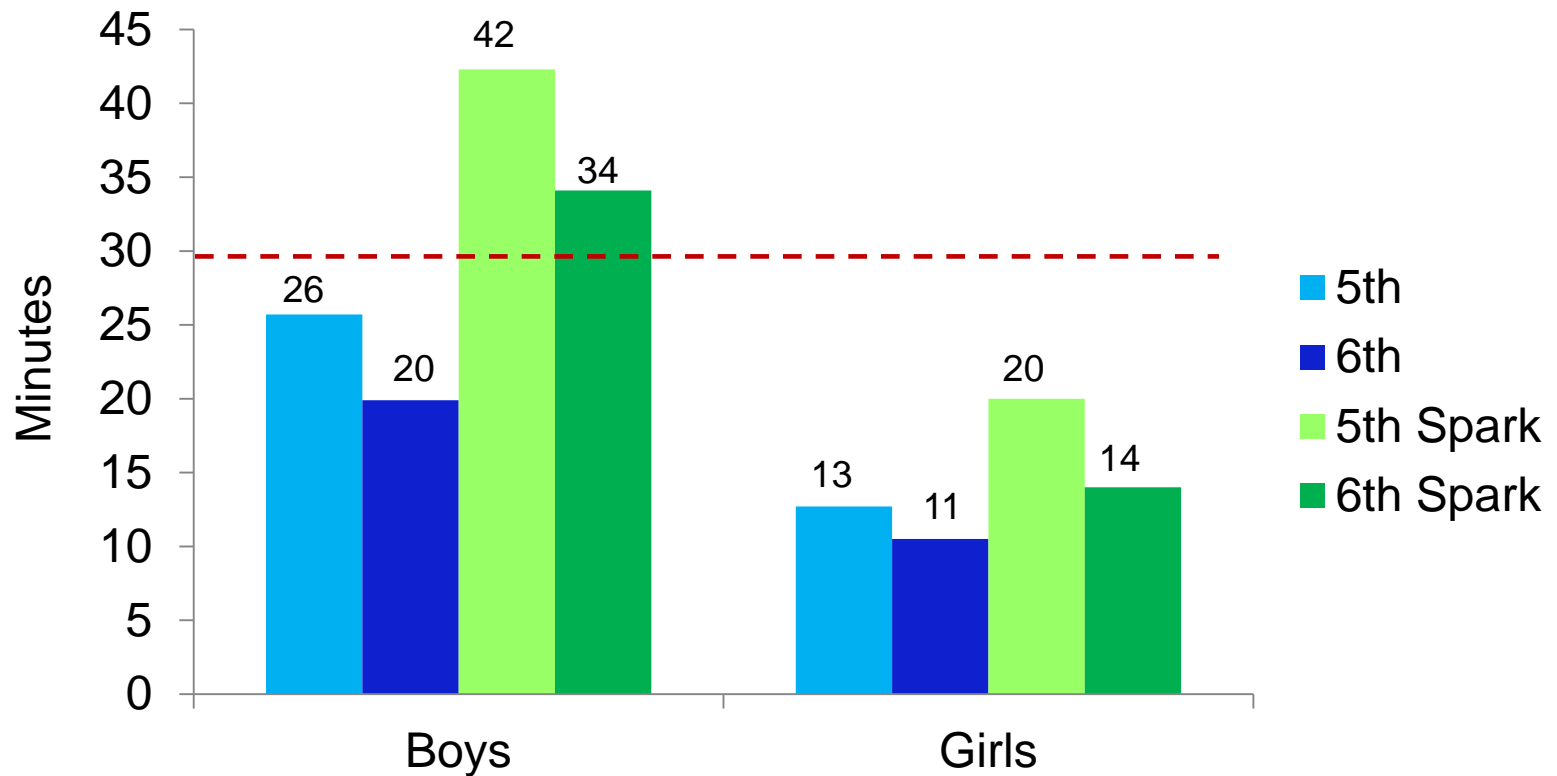
Gender Disparities in Total Daily and In-School Physical Activity



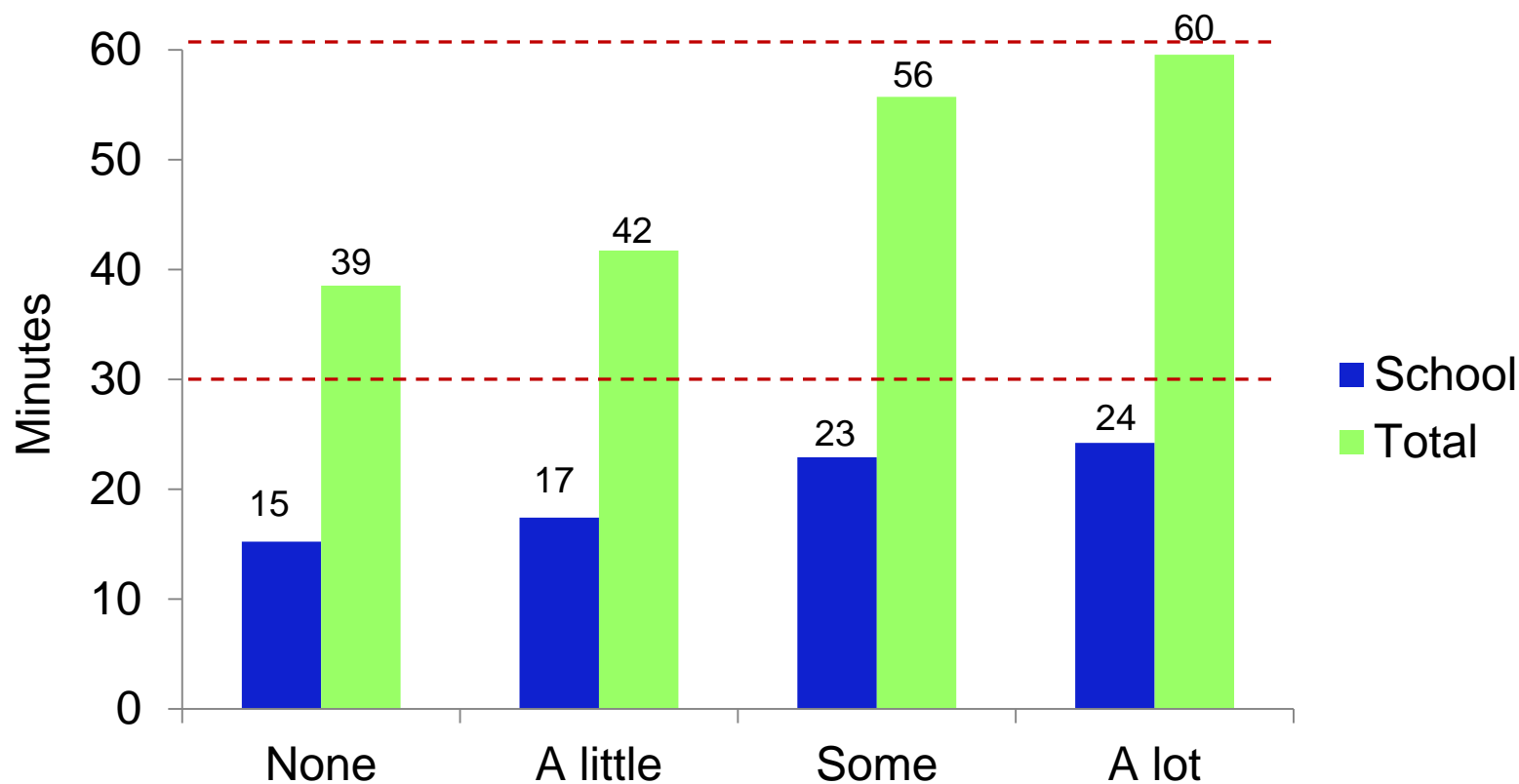
Who is Moving More? *And Why?*



School-time Minutes of Physical Activity at Spark Academy



Physical Activity by Parent-Reported Child Behavior



Physical Activity Environment

PA Promoting Policies and Programming



Physical Activity Environmental Scan

1. Physical Education
2. Recess
3. Classroom PA
4. Before and After school PA programs
5. Other PA programming



Adoption of PA Promoting Policies

PE

- Schools that require at least 150 min PE/week
 - 21.6 min vs. 15.3 min

Recess

- Schools provide 100 min recess/week
 - 18.5 min vs. 13.2 min
- Supervisor-assisted & organized physical activity
 - 17.2 min vs. 12.9 min

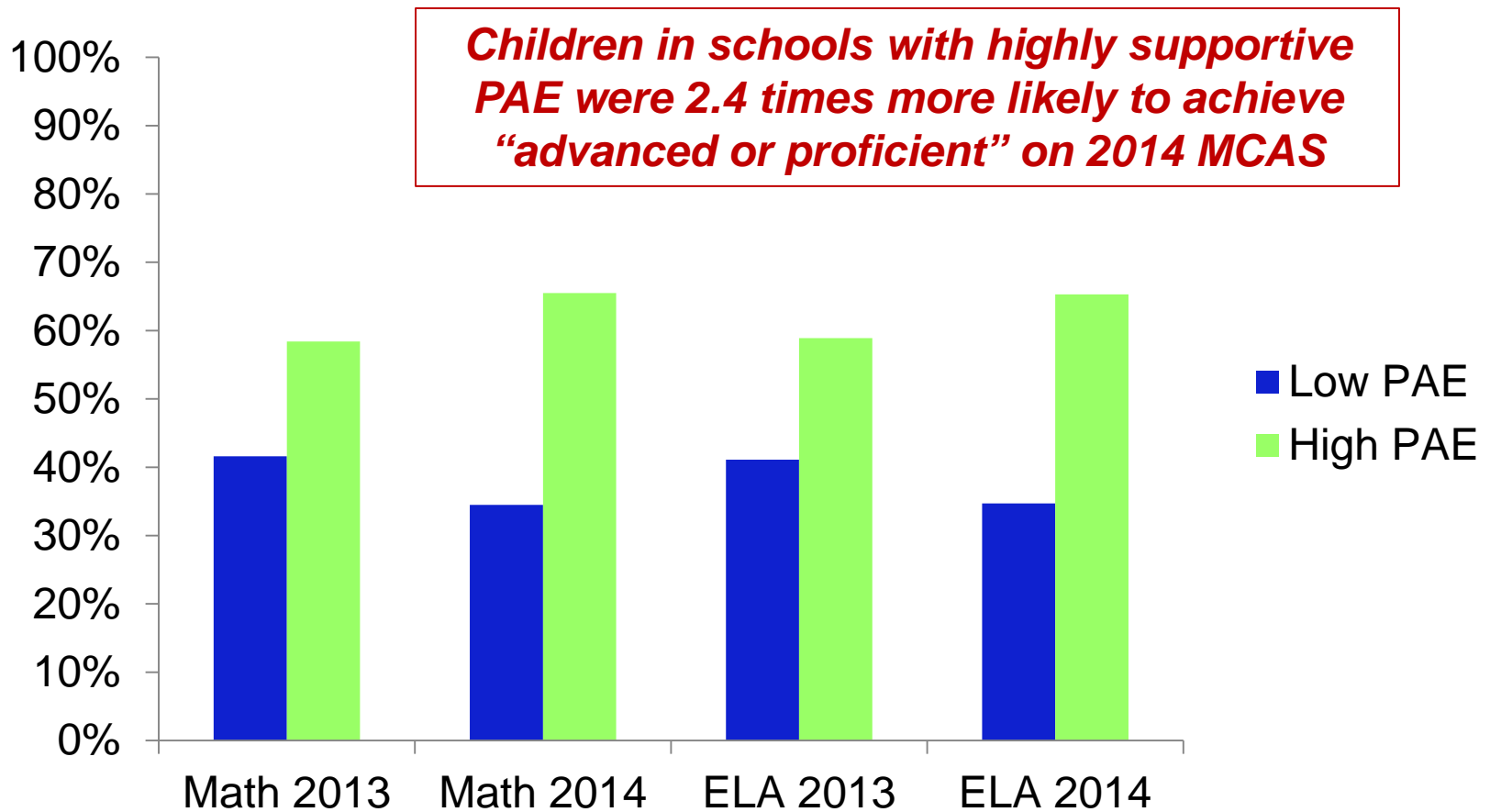
Other

- Few consistently offered in *classroom PA breaks* and *before & after school programming*

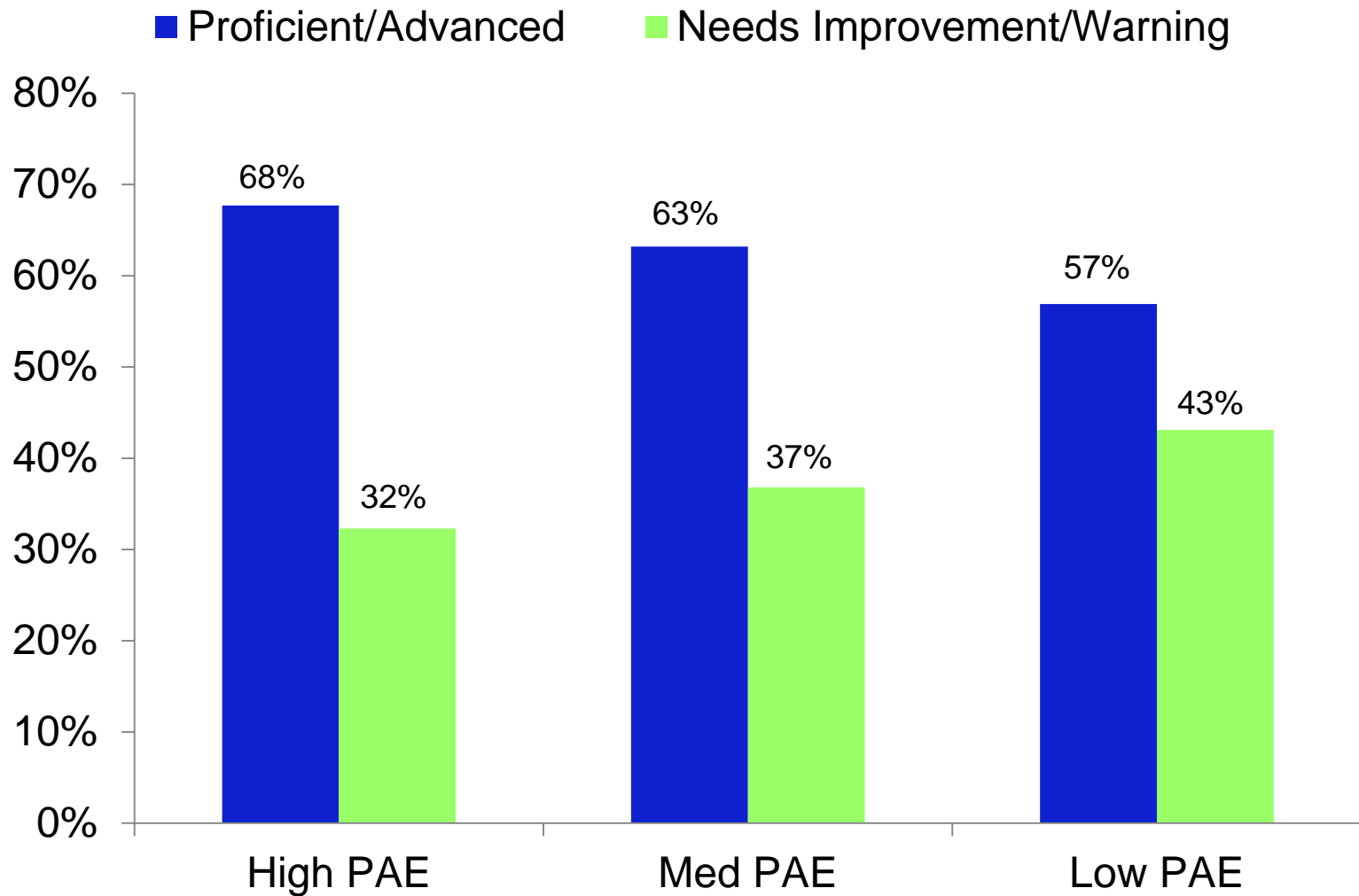
How Environments Can Shape Minds



Physical Activity Environment and % Students with MCAS Scores Proficient/Advanced



Predicted Distribution of Math MCAS and Physical Activity Environment



Study Implications

1. More physical activity is needed *for all children*
2. Significant gender disparities
3. Need for “whole school” approach to increasing physical activity
 - No one magic bullet
4. Physical activity-promoting environments linked to academic achievement
5. Snapshot in time
 - Longitudinal data needed
 - Impact of different PA environmental changes on physical activity and academic success

Thank You for Your Support of Children's Health and Movement!

Co-Investigators

- Catherine Wright, MS
- Virginia Chomitz, PhD
- Kenneth Chui, MPH, PhD
- Christina Economos, PhD
- Nicole Schultz, MS, MPH

