

Physical Education & Physical Activity Policy: Evaluation of Boston's Active School Day Initiatives

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Physical Education & Physical Activity

- Physical Education and Physical Activity part of HP2020 goals
- Physical Education time is not always “active”
- Interventions address increasing MVPA in PE (CATCH and SPARK)
- Policy can promote “Active PE” and increased physical activity
- Can be at a school district (LEA) and/or state levels



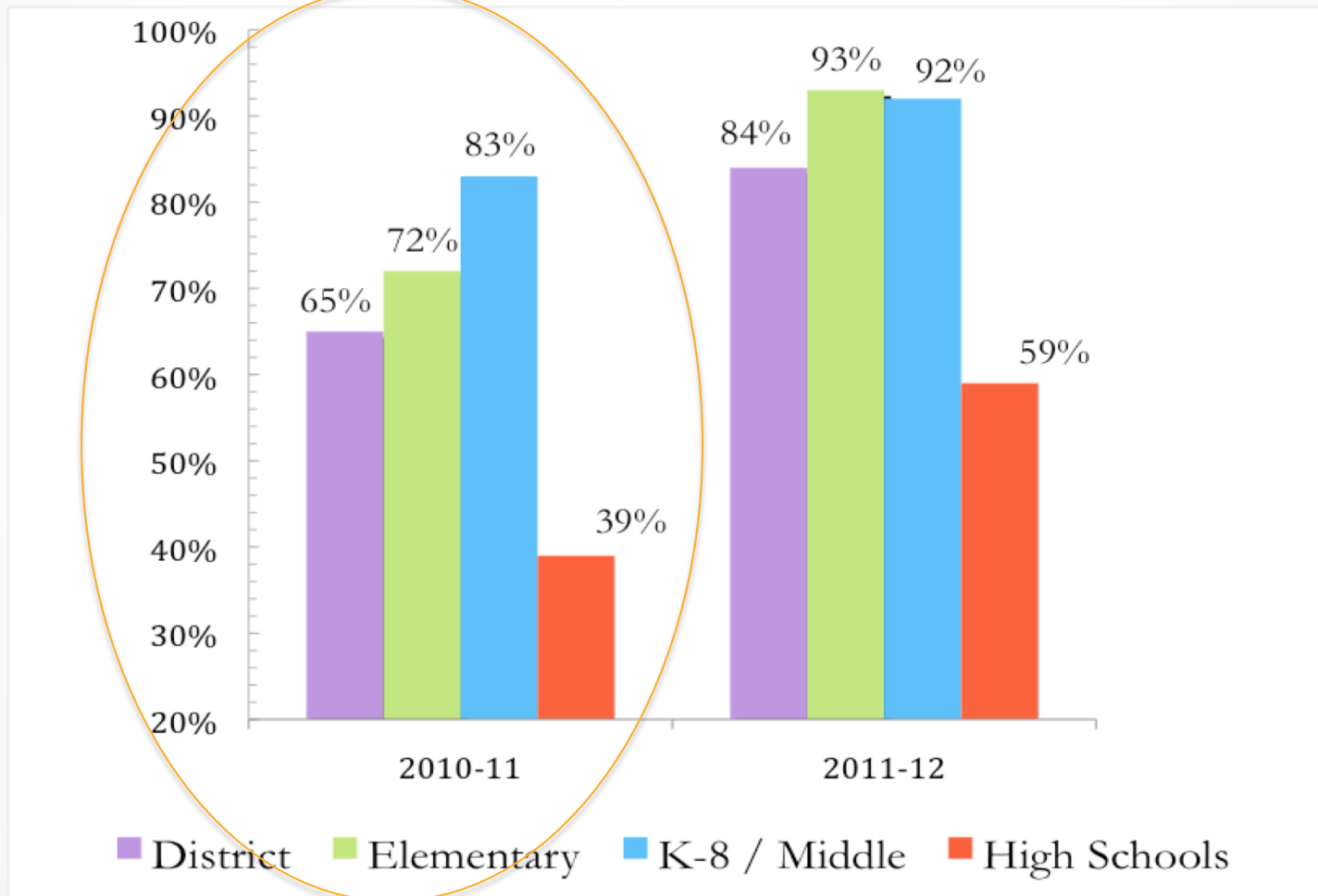
Boston Public Schools

2010-2011

- Relatively large district, 134 Schools
- Over 56,300 students
 - 39% Hispanic
 - 37% Black
 - 13% White/Non-Hispanic
 - 9% Asian
- 75% Eligible for free or reduced price school meals
- 15% Obese (versus 11% in Massachusetts)
- Reported participation in PE class dropped from 63% in 1993 to 38% in 2009 (Boston YRBS)



Schools offering Physical Education, Boston MA



% of BPS schools that offer students physical education

Proposed PE & PA Policy and Implementation Targets

Schools must provide all students in grades K-12 with weekly physical education and daily physical activity during the school day as a part of a Comprehensive School Physical Activity Program (CSPAP).

The CSPAP implementation targets:

- At least **80 weekly minutes of quality, standards-based physical education** aligned with the Boston Public School Physical Education Curriculum Frameworks.
- An additional **70 or more minutes of standards-based physical education and or planned physical activity**, such as movement breaks, structured recess and cross-curricula lessons involving movement.

Improving Quality and Access

Improving quality of PE

&

Integrating PA across the school day

In schools with PE teachers:

- A district-wide curriculum focused on MVPA and lifelong PA
- Training and equipment
- Instructional Coaching
- PE leadership team

In schools without PE teachers:

- Served by trained PE specialists
- Intensive support on overcoming barriers: time, facilities, and scheduling

- Policy and Program Specialists
- Wellness Champions in schools
- Training on four buckets of Physical Activity



Active School Day Study Evaluation Overview

Eligible for
study
inclusion

- 14 schools for Intervention
- 7 schools for Control
- Greater than 200 student enrollment

Matched I/C

- PE FTE/ PA facilities
- Race/ethnic student match
- Enrollment size
- %Eligible for Free/Reduced Price Meal Programs

Recruitment

- 3 Intervention/3 control schools enrolled
- Randomly selected classrooms with 4th and 5th grade students
- ~ 75 students per school, 26 classrooms

Active School Day Evaluation

- Students wore accelerometers during the school day for one week (March & June 2011)
- Teachers in selected classrooms completed weekly activity logs to record minutes per day in:
- Physical Education Classes (specialist/non-specialist)
- Physical Activity “Buckets”
 - ✓ Recess
 - ✓ Movement Breaks
 - ✓ Cross-curricular lessons
 - ✓ Movement promotion



Baseline Analysis Methods

- Descriptive analysis of implementation measures & student activity levels
- Fixed effects comparisons of physical activity levels on multiple days among students estimate within-child differences in:
 - Minutes of Moderate and Vigorous, Sedentary Activity
 - Comparison by type of PE/PA provided
- Other covariates
 - Weather (temperature, precipitation)
 - Monitored time



	Eligible Students ^a	Participating Students ^b		
		All	Intervention	Control
Characteristic	N=842	N=429	N=217	N=212
<i>Gender</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>
Male	431 (51%)	207 (48%)	118 (54%)	89 (42%)
Female	411 (49%)	222 (52%)	99 (46%)	123 (58%)
<i>Race/Ethnicity</i>				
White, Non-Hispanic	17 (2%)	7 (2%)	4 (2%)	3 (1%)
Black, Non-Hispanic	508 (60%)	256 (60%)	141 (65%)	115 (54%)
Hispanic/Latino	247 (29%)	127 (30%)	66 (30%)	61 (29%)
Asian	54 (6%)	28 (7%)	1 (<1%)	27 (13%)
Other/Unknown	16 (2%)	11 (3%)	5 (2%)	6 (3%)
<i>Grade</i>				
4	441 (52%)	207 (48%)	99 (46%)	108 (51%)
5	401 (48%)	222 (52%)	118 (54%)	104 (49%)
Age (yr) <i>Mean (SD)</i>	10.2 (0.8)	10.2 (0.8)	10.3 (0.8)	10.2 (0.8)

^a Eligible students: all 4th and 5th grade students attending 6 schools in evaluation sub-sample

^b Participating Students: all students in selected 4th and 5th grade classes who provided at least 2 weekdays of valid accelerometer data

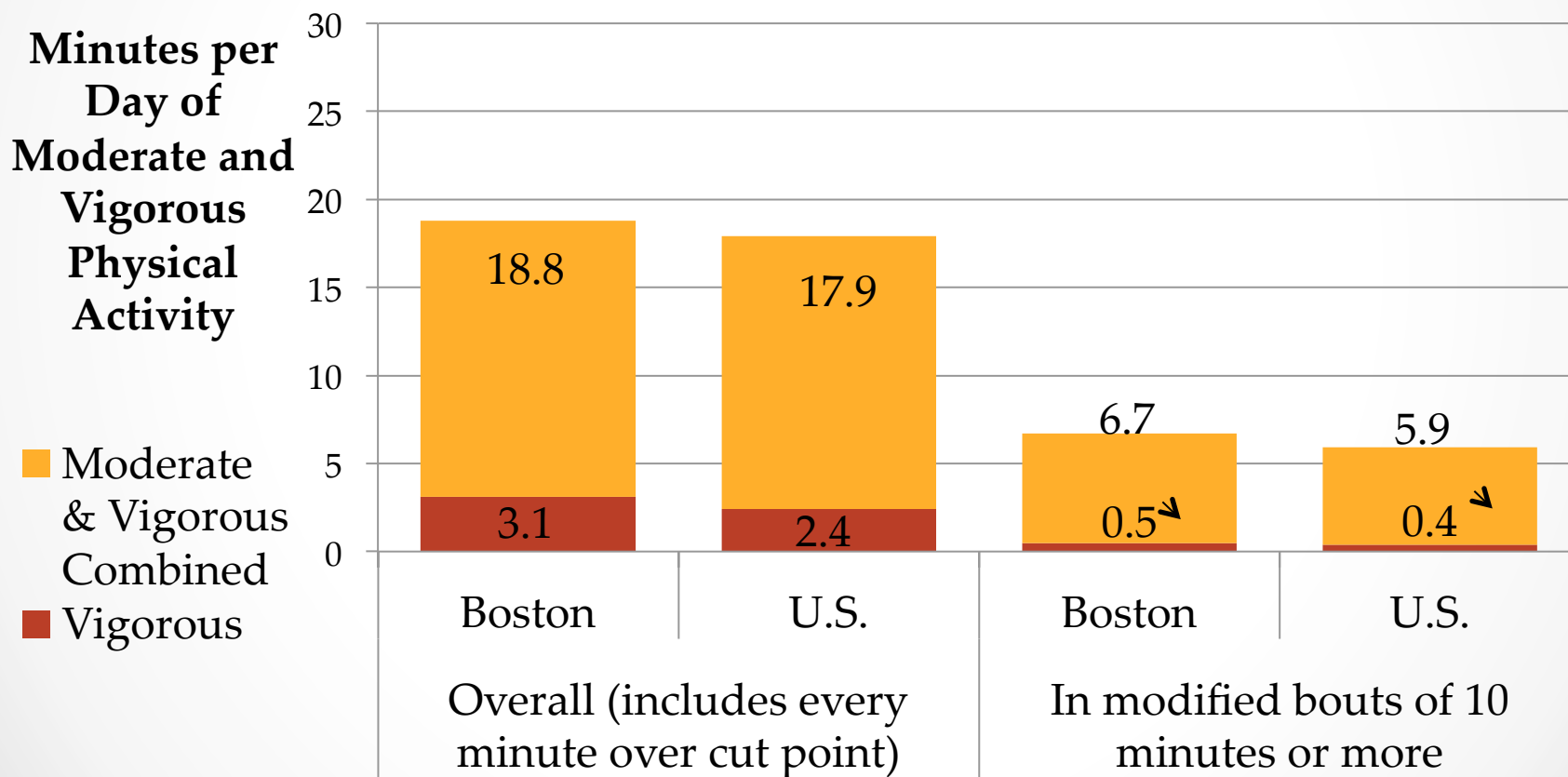
Teacher Logs: Summary among Class-Days (N=126)

Physical Activity Type	# Days Provided [n]	Minutes per Day when Provided [Median (Range)]
PE, Led by Specialist	25	48 (40-60)
PE, Led by Non-specialist	2	48 (N/A)
Recess	67	20 (7-48)
Movement Break	12	10 (5-25)
Cross-curricular lesson	7	48 (33-190)
Movement Promotion	2	88 (60-115)
Any Physical Activities	81	30 (0-205)

- Considerations about teacher log information:

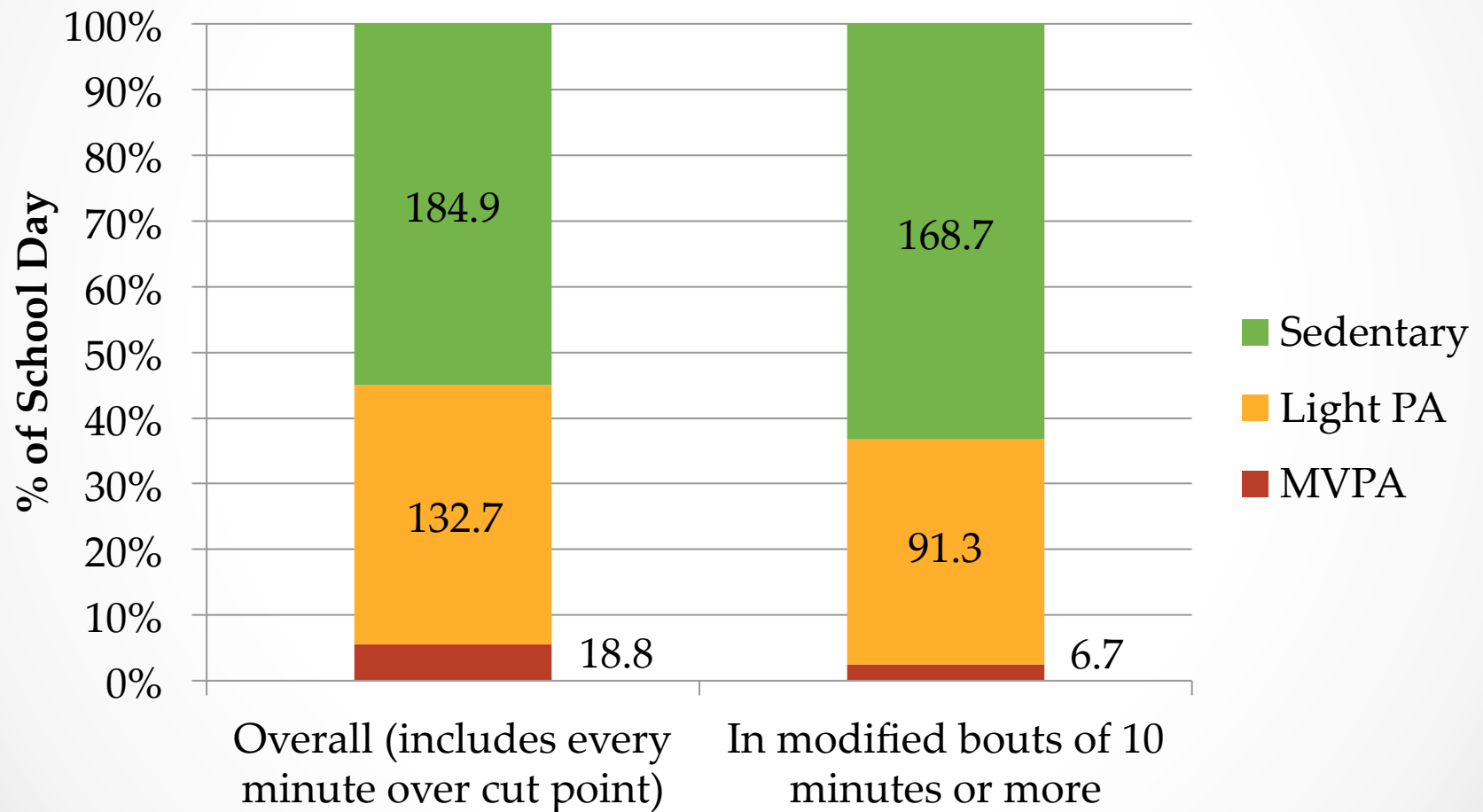
- Not always complete
- Few PA types provided other than specialist-led PE & recess
- Recess frequently indoors

Average Minutes Per School Day of MVPA among 4th and 5th Graders, March 2011



❖ Recommended level: 30 minutes of MVPA per school day

Average Minutes Per School Day 4th and 5th Grade Students by Activity Levels, March 2011



Differences in Daily Minutes of Moderate and Vigorous Physical Activity (MVPA), N=1852 Child Days

Characteristic	Overall (includes every minute over cut point)	In modified bouts of 10 minutes or more	# Child-Days with Any PA Minutes
	<i>Diff (SE)</i>	<i>Diff (SE)</i>	<i>n</i>
<i>Minutes in PA Periods</i>			
Specialist-led PE	0.23 (0.01)***	0.18 (0.01)***	384
Non-specialist-led PE	0.25 (0.07)***	0.24 (0.06)***	14
Recess	-0.01 (0.04)	0.01 (0.03)	934
Movement break	-0.17 (0.09)	0.21 (0.08)*	143
Cross-curricular lesson	-0.06 (0.02)***	-0.07 (0.01)***	109
Movement promotion	0.49 (0.02)***	0.51 (0.02)***	36

Moderate and Vigorous Physical Activity defined as 4 METs or greater, with accelerometer cutpoints identified using age-specific equations per Freedson et al.1997. Modified bouts identified per Troiano et al. 2008.

Models also adjusted for day of week, minutes of monitor wear, monitor type, temperature, precipitation amount, gender, grade, race/ethnicity, and nesting of days within students and students within schools. *= $<.05$, **= $<.01$, ***= $<.001$

Differences in Daily Minutes of Sedentary Time

N=1852 Child-Days

Characteristic	Overall (includes every minute over cut point)	In modified bouts of 10 minutes or more	# Child-Days with Any PA Minutes
	<i>Diff (SE)</i>	<i>Diff (SE)</i>	<i>n</i>
<i>Minutes in PA Periods</i>			
Specialist-led PE	-0.24 (0.04)***	-0.23 (0.06)***	384
Non-specialist-led PE	-0.06 (0.21)	0.16 (0.30)	14
Recess	0.15 (0.12)	0.26 (0.17)	934
Movement break	1.29 (0.29)***	1.32 (0.41)**	143
Cross-curricular lesson	0.11 (0.05)*	0.14 (0.07)*	109
Movement promotion	-0.32 (0.07)***	-0.41 (0.10)***	36

Sedentary Time defined as <100 accelerometer counts/minute. Modified bouts identified per Troiano et al. 2008.

Models also adjusted for day of week, minutes of monitor wear, monitor type, temperature, precipitation amount, gender, grade, race/ethnicity, and nesting of days within students and students within schools. *=<.05, **=<.01, ***=<.001

Conclusions

- During school, Boston students were engaging in one third (31%) of recommended 60 minutes daily PA
- PE resulted in more minutes MVPA & VPA and fewer minutes of sedentary time
 - On a day with a 48-minute PE period, kids would have additional 11 minutes of MVPA overall & 9 minutes in fitness-promoting bouts
 - For 60 minute PE class, additional 14 minutes overall & 11 minutes in bouts
- Next steps: Estimating impact of training and technical assistance on relationships at follow-up

