Data Brief – Obesity and Severe Obesity among Philadelphia schoolchildren, 2006/07 – 2012/13

Executive summary

- From 2006/07 to 2012/13, the prevalence of obesity among Philadelphia schoolchildren declined from 21.7% to 20.3% (a 6.3% reduction) and severe obesity declined from 8.5% to 7.3% (a 13.5% reduction).
- Obesity declines were larger among boys than girls, and among African Americans and Asians than whites and Hispanics.
- Over the last three years (2009/10 – 2012/13), obesity declined to a lesser degree than in the first four years of study (2006/07 – 2009/10). It continued to decrease significantly among boys (including African Americans and Asians), trended downward in girls, but increased significantly among Hispanic girls and girls in grades K-5.
- Over the last three years, severe obesity also continued to decrease significantly among all children and girls (including African American girls).
- By 2012/13, Hispanics had the highest prevalence of obesity among boys (25.9%) and girls (23.0%). Hispanic boys (10.1%) and African American (8.3%) girls had the highest prevalence of severe obesity.
- Obesity and severe obesity have continued to decline among many children in Philadelphia, particularly boys, African Americans, and Asians, but obesity has increased among Hispanic girls and girls in grades K-5 after initial reductions. Further monitoring and interventions—especially among Hispanics and girls—are needed to effectively address childhood obesity in Philadelphia.

Background

- Multiple U.S. communities have reported reductions in obesity among school-aged children.[1]
- In a 2012 paper,[2] the Philadelphia Department of Public Health (PDPH) documented a 4.8% reduction in obesity among Philadelphia public school students between 2006/07 and 2009/10. The largest reductions were seen among African American boys and Hispanic girls.
- With three additional years of data, we assessed trends in obesity and severe obesity among Philadelphia public school children between 2006/07 and 2012/13.

Methods

- Heights and weights for public schoolchildren were measured by school nurses, entered into a database along with age, gender, and race/ethnicity, and shared with PDPH.[3]
- Body mass index (BMI) and BMI percentiles were calculated using age- and sex-specific growth charts from the Centers for Disease Control and Prevention. Obesity was defined

as a BMI percentile ≥ 95, and severe obesity as a BMI percentile ≥ 120% of the obesity threshold.

- Obesity and severe obesity were reported for the total population, for each gender, and within gender by grade and race/ethnicity.
- Trends over time were assessed in multi-variable models, including race/ethnicity, year of age, and grade. The three time periods of interest were 2006/07 to 2009/10 (the initial study period), 2009/10-2012/13 (the follow-up study period), and 2006/07-2012/13 (the entire study period).

Results – study population

- The number of enrolled K-12 students in the School District of Philadelphia declined from 186,176 in 2006/07 to 147,818 in 2012/13.
- The number of students with valid BMI assessments varied by school year, starting at 114,909 in 2006/07, peaking at 122,448 in 2009/10, and declining to 88,798 in 2012/13. The percentage with valid BMI assessments ranged from 62% in 2006/07 to 73% in 2010/11 to 60% in 2012/13.

Results – obesity (Figures 1, 3, and 4)

- From 2006/07 to 2012/13, obesity declined from 21.7% to 21.3%—a decline of 6.3%. Reductions were larger in the first four years (4.6%) than in the last three years (1.8%).
- Among **boys**, obesity declined from 21.9% to 20.1% over seven years—a decline of 8.1%.
    - The largest declines were seen in grades K-5 (8.8%) and among African Americans (11.3%) and Asians (18.8%).
    - All race/ethnicity groups saw declines between 2006/07 and 2009/10, but only African-American and Asian boys had significant continuing reductions in obesity between 2009/10 and 2012/13.
- Among **girls**, obesity trended downward from 21.4% to 20.5% over seven years—a decline of 4.3%. No groups saw significant reductions, and the declines were smaller in the final three years than in the first four years.
    - The largest reductions were seen in grades 6-8 (6.1%) and among African Americans (3.8%) and Asians (7.1%).
    - Among Hispanic females, obesity initially declined from 22.7% to 20.9% from 2006/07 to 2009/10 but then increased significantly to 23.0% by 2012/13.
    - Girls in K-5 also experienced an increase in the last three years from 19.2% to 19.5%.

Results – severe obesity (Figures 2, 5, and 6)

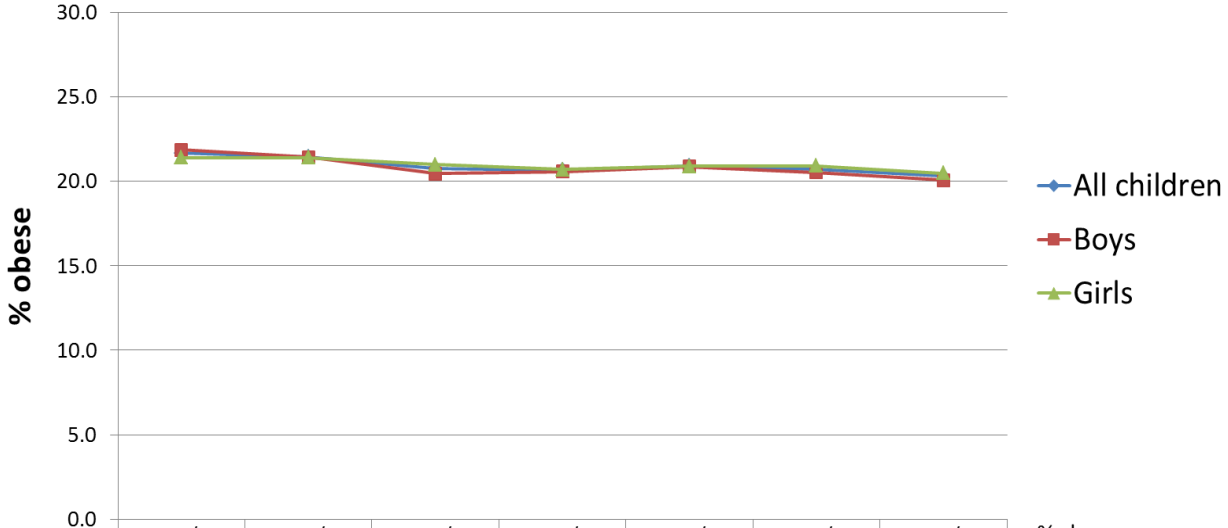
- From 2006/07 to 2012/13, severe obesity declined significantly for all children (8.5% to 7.3%, a relative decline of 13.5%), boys (8.9% to 7.5%), and girls (8.1% to 7.2%). The largest reductions were seen among African Americans and Asians.

- Over the last three years, severe obesity continued to decline significantly for all children and girls. All race/ethnicity groups, except for Hispanics, saw continued downward trends. Notably, African American girls experienced a significant 8.0% reduction during this period. Hispanic girls experienced a non-significant increase in severe obesity over the final three years but a 7.5% decrease over the entire study period.

Discussion

- Obesity and severe obesity have continued to decline among many children in Philadelphia, particularly boys, African Americans, and Asians, but obesity has increased among Hispanic girls and girls in grades K-5 after initial reductions.
- Declines in obesity may be due to local initiatives—such as *Get Healthy Philly*—focusing on environmental change interventions in schools, after-school programs, communities, and the media, and state and federal efforts.[4]
- Hispanic children and girls may face bigger challenges related to certain mediators of good nutrition and physical activity than other racial/ethnic groups and boys, respectively. For Hispanics, such challenges may include unhealthy food availability in schools,[5,6] advertising of unhealthy foods and beverages on Spanish-language media,[7,8,9,10] sugary drink intake,[11] and limited moderate to vigorous exercise.[12] For girls, social and biological factors may be at play,[13] including significantly lower levels of moderate to vigorous exercise.[14]
- Broader and more effective social, environmental, and clinical interventions are needed to sustain and advance reductions in childhood obesity in Philadelphia and across the U.S.

Figure 1: Obesity among Philadelphia public school children, 2006/07 - 2012/13

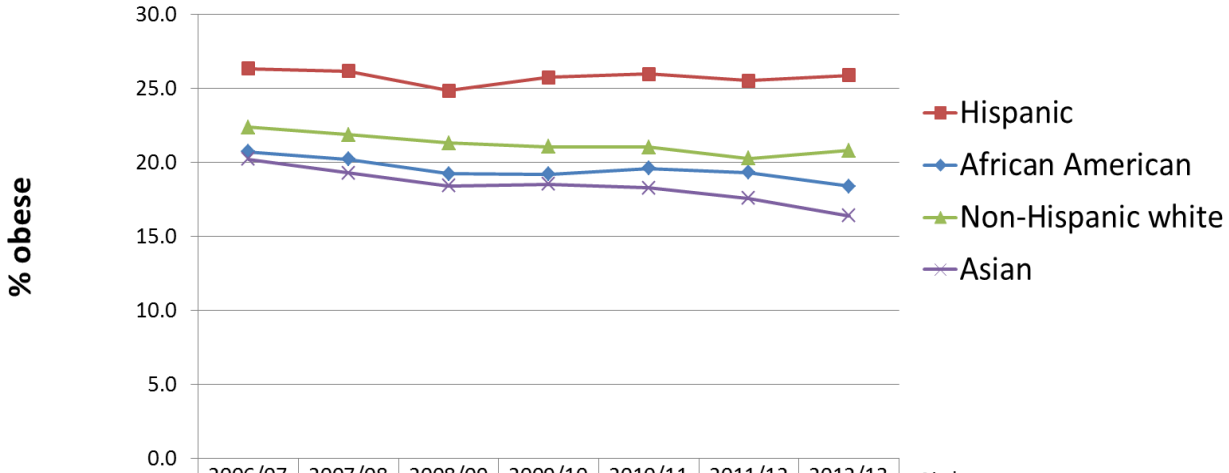


	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	% change
All children	21.7	21.5	20.8	20.7	20.9	20.7	20.3	-6.3%
Boys	21.9	21.4	20.5	20.6	20.9	20.5	20.1	-8.1%
Girls	21.4	21.4	21.0	20.7	20.9	20.9	20.5	-4.3%

Figure 2: Severe obesity among Philadelphia public school children, 2006/07 - 2012/13

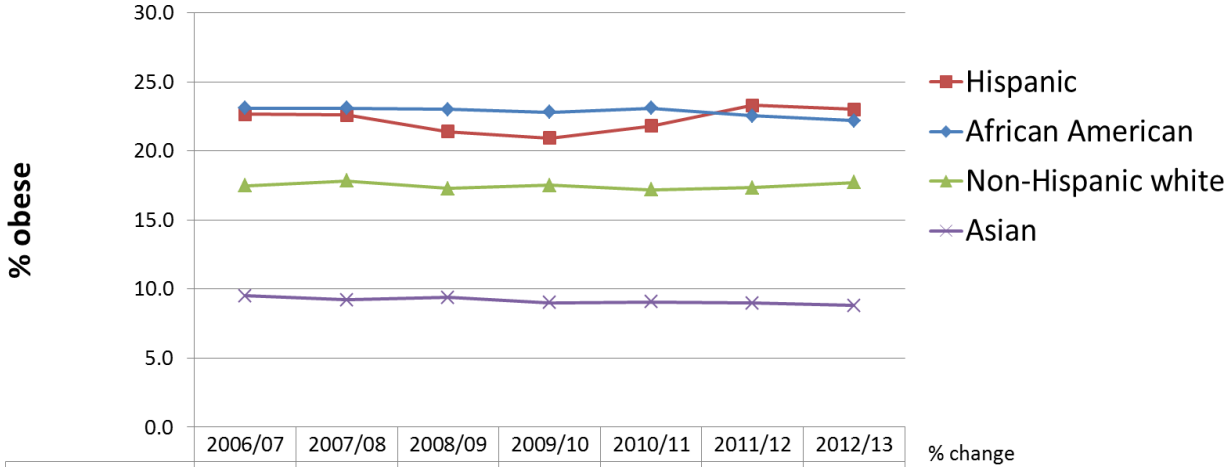
	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	% change
All children	8.5	8.4	7.9	7.8	7.9	7.7	7.3	-13.5%
Boys	8.9	8.6	7.9	7.8	7.9	7.9	7.5	-16.2%
Girls	8.1	8.2	7.9	7.8	8.0	7.5	7.2	-11.2%

Figure 3: Obesity among male Philadelphia public school children, by race/ethnicity, 2006/07 - 2012/13



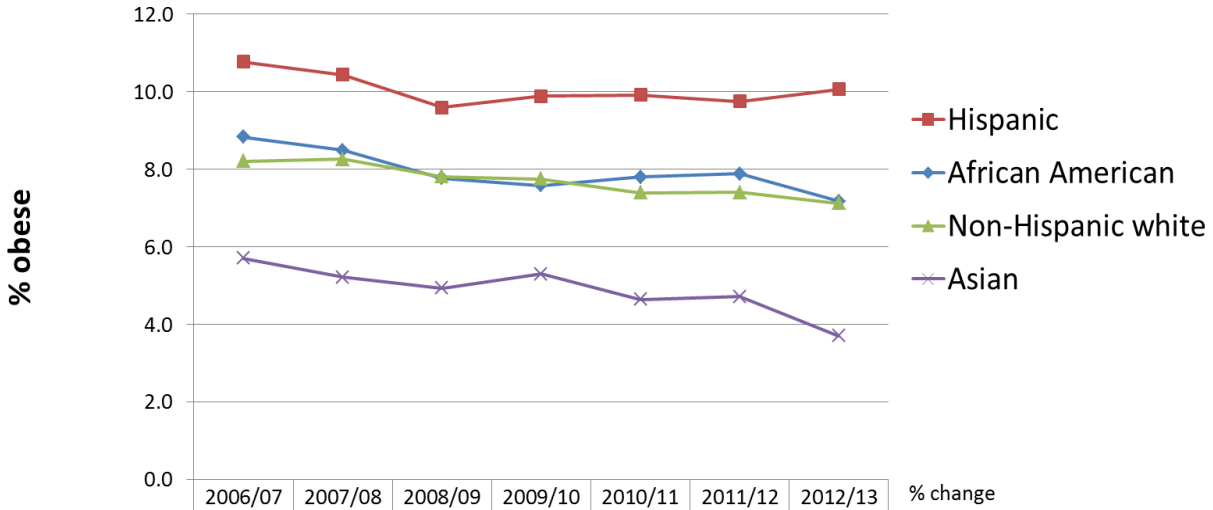
	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	% change
Hispanic	26.3	26.2	24.9	25.8	26.0	25.5	25.9	-1.7%
African American	20.7	20.2	19.3	19.2	19.6	19.3	18.4	-11.3%
Non-Hispanic white	22.4	21.9	21.3	21.1	21.0	20.3	20.8	-7.0%
Asian	20.2	19.3	18.4	18.5	18.3	17.6	16.4	-18.8%

Figure 4: Obesity among female Philadelphia public school children, by race/ethnicity, 2006/07 - 2012/13



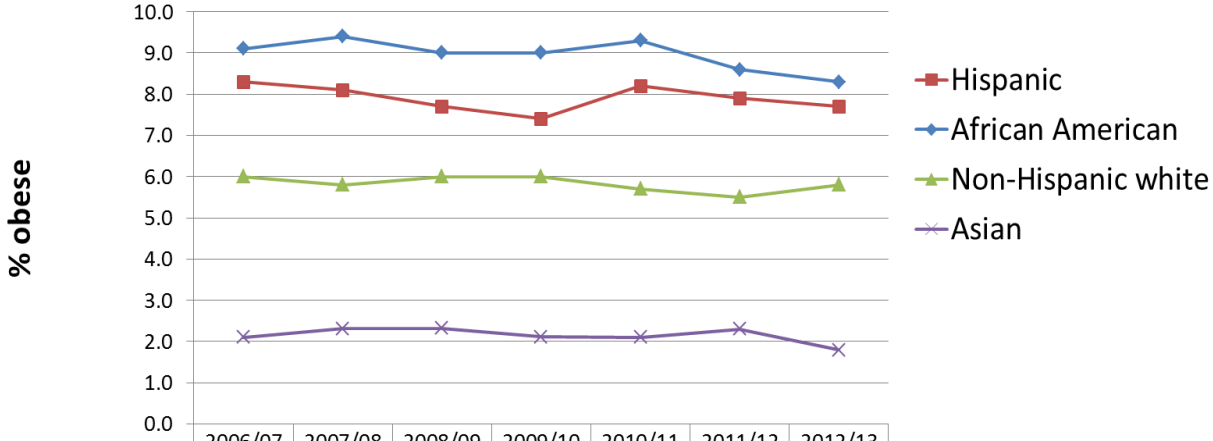
	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	% change
Hispanic	22.7	22.6	21.4	20.9	21.8	23.3	23.0	+1.5%
African American	23.1	23.1	23.0	22.8	23.1	22.5	22.2	-3.8%
Non-Hispanic white	17.5	17.8	17.3	17.5	17.2	17.3	17.7	+1.0%
Asian	9.5	9.2	9.4	9.0	9.1	9.0	8.8	-7.1%

Figure 5: Severe obesity among male Philadelphia public school children, by race/ethnicity, 2006/07 - 2012/13



	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	% change
Hispanic	10.8	10.4	9.6	9.9	9.9	9.8	10.1	-6.5%
African American	8.8	8.5	7.8	7.6	7.8	7.9	7.2	-18.8%
Non-Hispanic white	8.2	8.3	7.8	7.7	7.4	7.4	7.1	-13.4%
Asian	5.7	5.2	4.9	5.3	4.6	4.7	3.7	-35.0%

Figure 6: Severe obesity among female Philadelphia public school children, by race/ethnicity, 2006/07 - 2012/13



	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	% change
Hispanic	8.3	8.1	7.7	7.4	8.2	7.9	7.7	-7.5%
African American	9.1	9.4	9.0	9.0	9.3	8.6	8.3	-8.8%
Non-Hispanic white	6.0	5.8	6.0	6.0	5.7	5.5	5.8	-3.2%
Asian	2.1	2.3	2.3	2.1	2.1	2.3	1.8	-16.1%

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