

## 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 13.9% 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.

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### Background

- Multiple U.S. communities have reported reductions in obesity among school-aged children.<sup>1</sup>
- In a 2012 paper,<sup>2</sup> 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.<sup>3</sup>
- 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  $\geq 95$ , and severe obesity as a BMI percentile  $\geq 120\%$  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)**

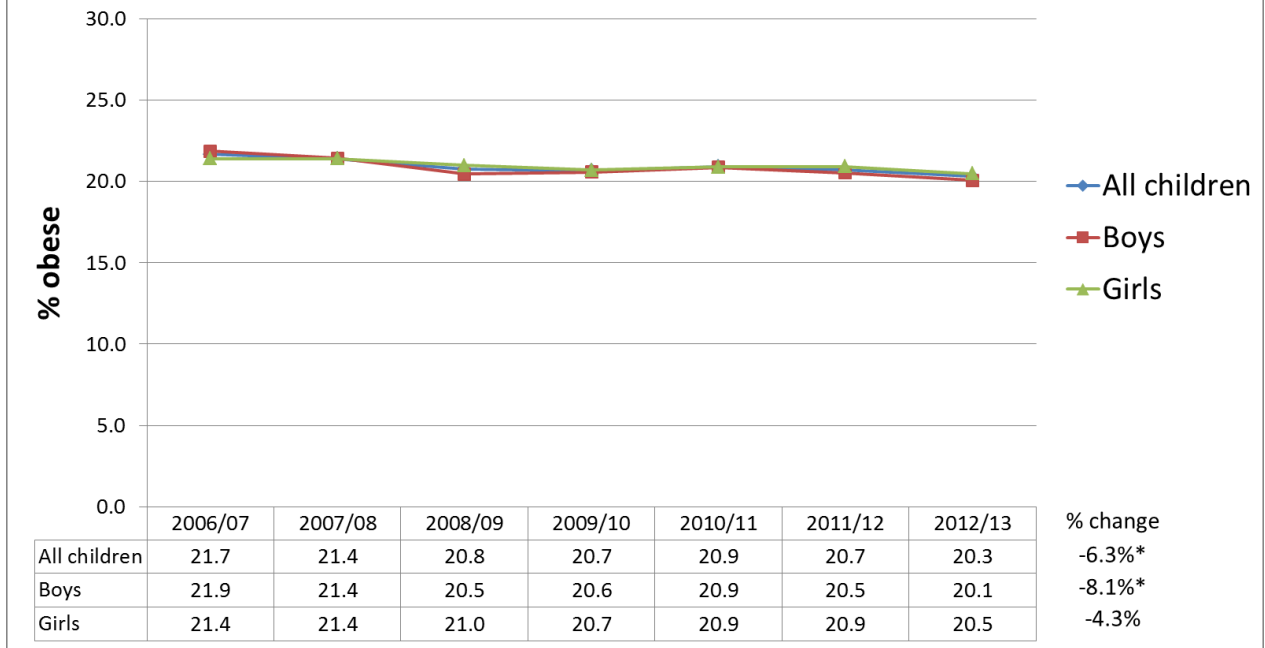
- From 2006/07 to 2012/13, severe obesity declined significantly for all children (8.5% to 7.3%, a relative decline of 13.9%), boys (8.9% to 7.5%), and girls (8.1% to 7.2%). The largest reductions were seen among African Americans and Asians.

- 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**

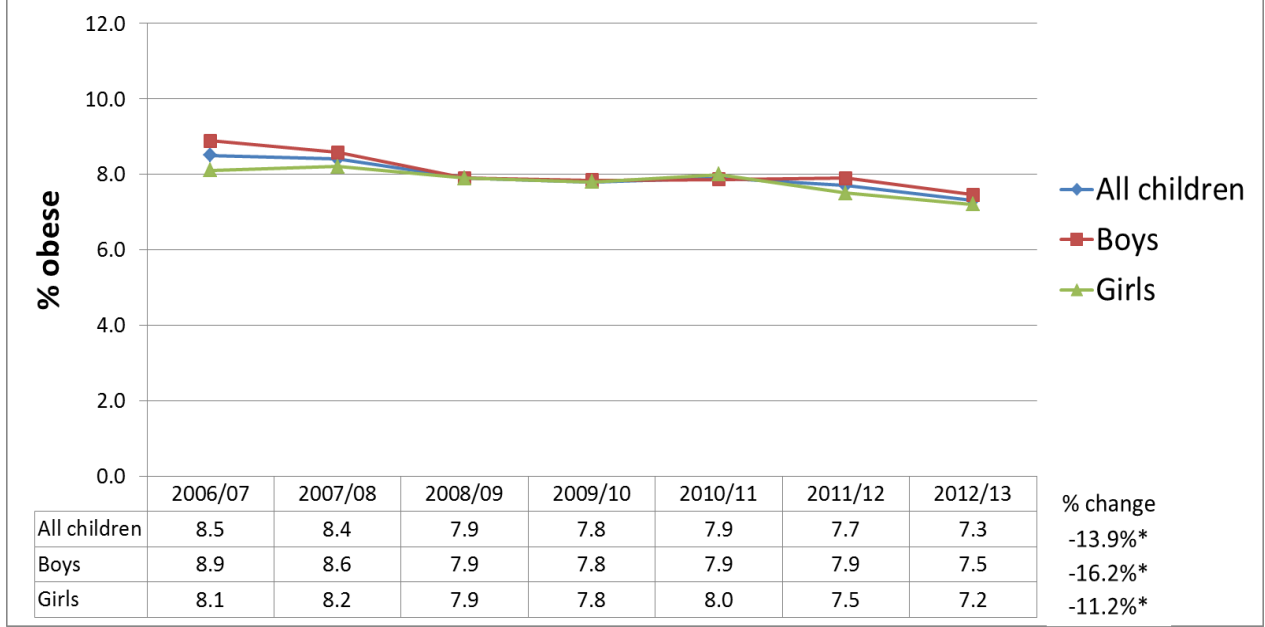
- Obesity and severe obesity have continued to decline among many children in Philadelphia, particularly boys, African Americans, and Asians, but obesity has increased among Hispanic girls and girls in grades K-5 after initial reductions.
- Declines in obesity may be due to local initiatives—such as [Get Healthy Philly](#)—focusing on environmental change interventions in schools, after-school programs, communities, and the media, and state and federal efforts.<sup>4</sup>
- 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,<sup>5,6</sup> advertising of unhealthy foods and beverages on Spanish-language media,<sup>7,8,9,10</sup> sugary drink intake,<sup>11</sup> and limited moderate to vigorous exercise.<sup>12</sup> For girls, social and biological factors may be at play,<sup>13</sup> including significantly lower levels of moderate to vigorous exercise.<sup>14</sup>
- 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**



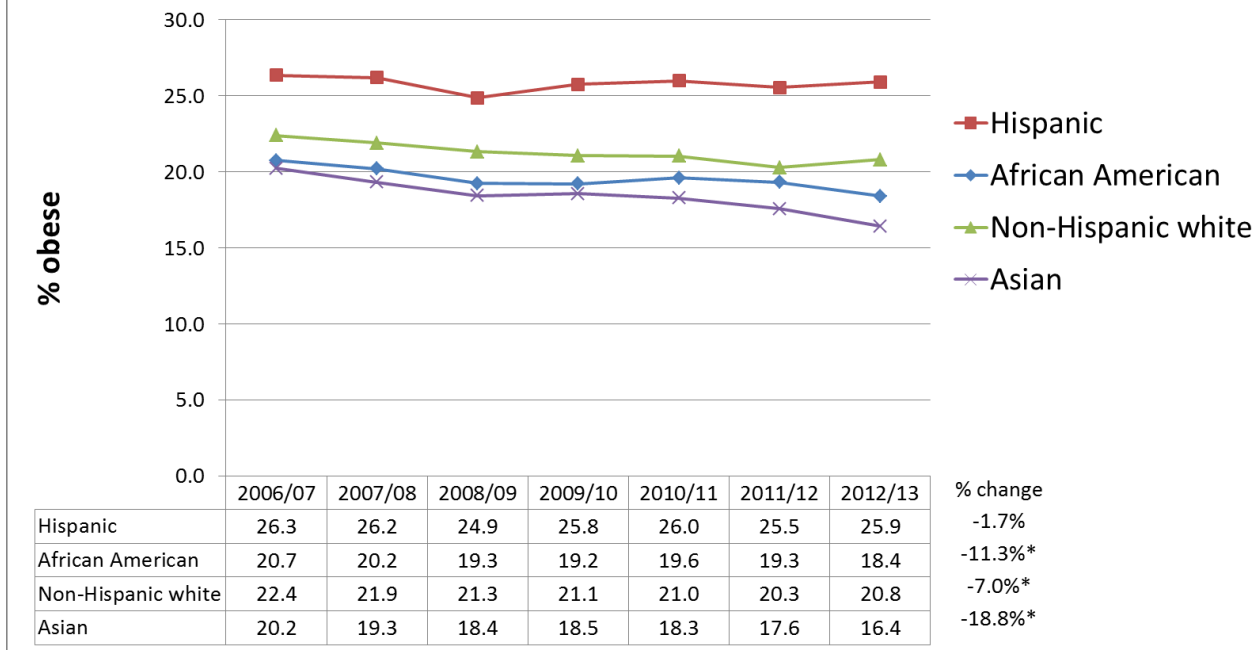
\*p<0.05

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



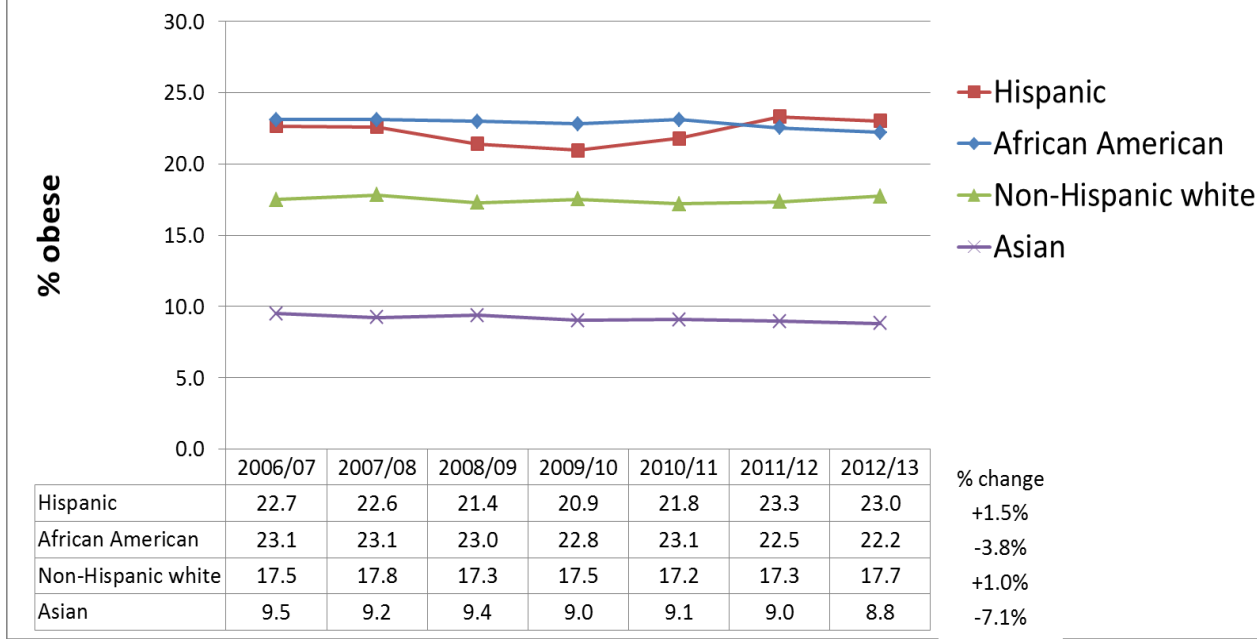
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**Figure 3: Obesity among male Philadelphia public school children, by race/ethnicity, 2006/07 - 2012/13**



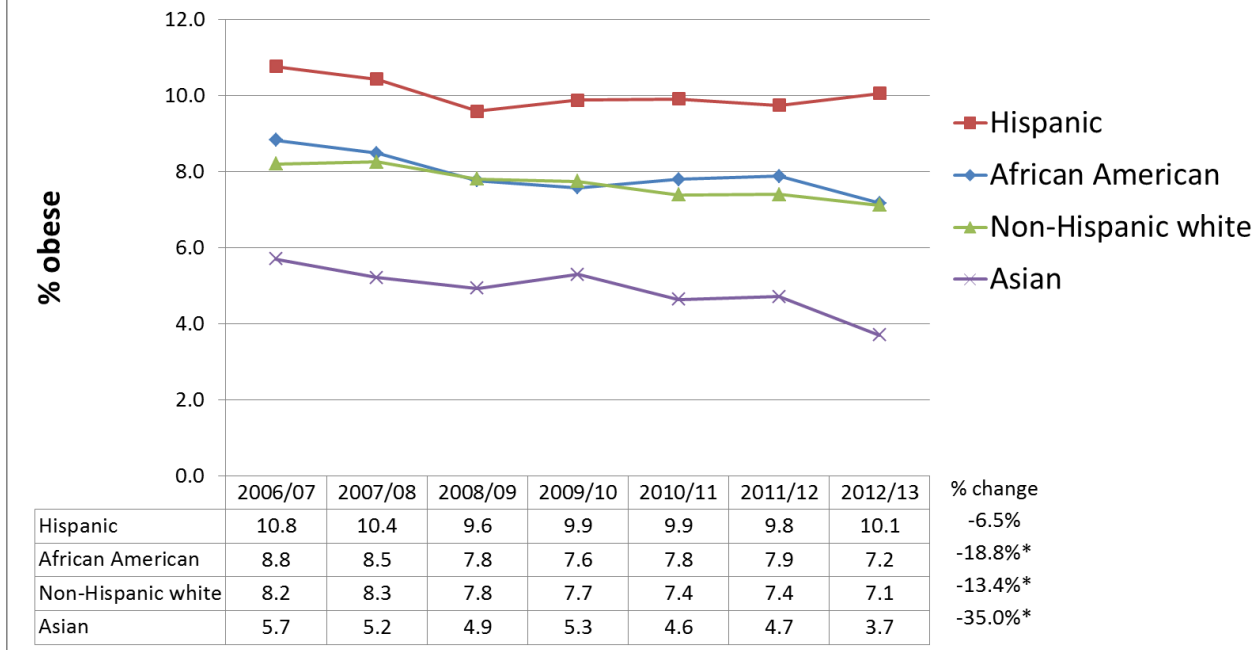
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**Figure 4: Obesity among female Philadelphia public school children, by race/ethnicity, 2006/07 - 2012/13**



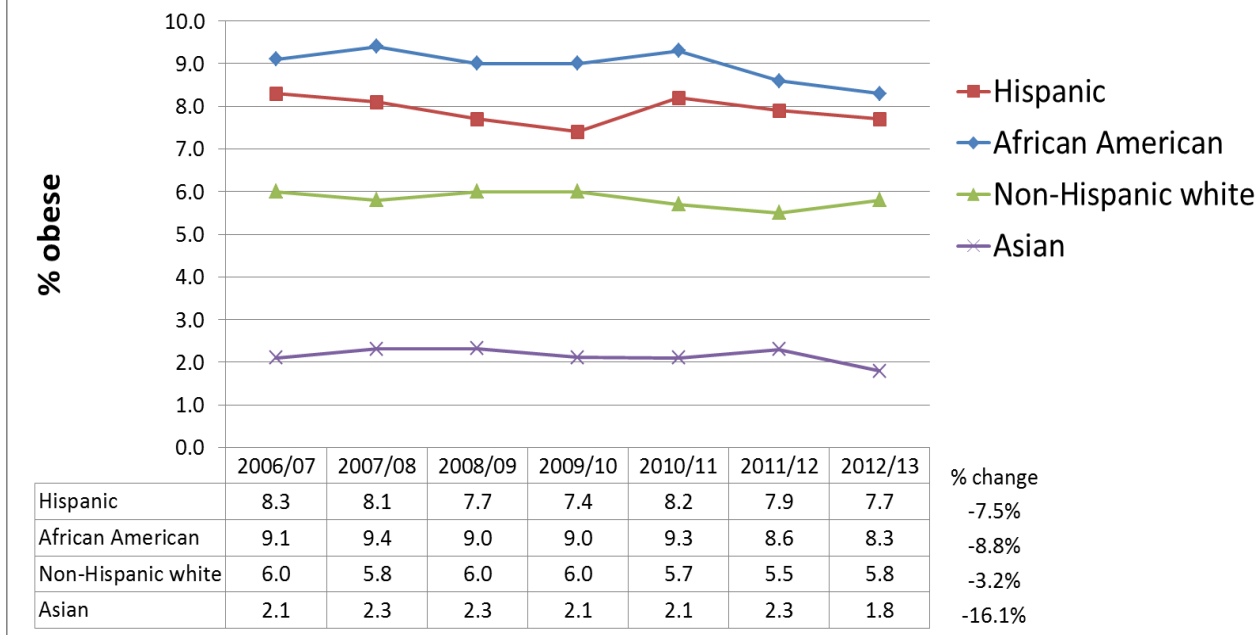
\*p<0.05

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



\*p<0.05

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



\*p<0.05

## References

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- <sup>1</sup> Declining childhood obesity rates—where are we seeing signs of progress? Robert Wood Johnson Foundation Issue Brief, July 2013. [http://www.rwjf.org/content/dam/farm/reports/issue\\_briefs/2013/rwjf401163](http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2013/rwjf401163)
- <sup>2</sup> Robbins J, Mallya G, Polansky M, Schwarz D. Obesity and Severe Obesity among Students in the School District of Philadelphia: Prevalence, Disparities, and Trends, 2006-2010. *Preventing Chronic Disease* 2012;9:120118.
- <sup>3</sup> Since the prior analysis, datasets for 2006/07 – 2009/10 were updated based on current data on birthdates, race/ethnicity, and sex, and exclusion criteria were reapplied. This led to small changes in the total number of students included overall and by subgroup and small changes in obesity and severe obesity prevalence estimates for those years.
- <sup>4</sup> Farley TA, Dowell D. Preventing Childhood Obesity: What are we doing right? *American Journal of Public Health*. 214;104:1579-1583.
- <sup>5</sup> Finkelstein DM, Hill EL, Whitaker RC. School food environments and policies in US public schools. *Pediatrics* 2008;122(1):e251-9.
- <sup>6</sup> Johnston, L.D., O'Malley, P.M., Terry-McElrath, Y.M., & Colabianchi, N. School policies and practices to improve health and prevent obesity: National Secondary School Survey results: school years 2006–07 through 2009–10. Volume 2. Bridging the Gap Program, Survey Research Center, Institute for Social Research, Ann Arbor, MI, 2012. Accessed on February 17, 2015 at [http://www.bridgingthegapresearch.org/\\_asset/dqzf6p/SS\\_2012\\_report.pdf](http://www.bridgingthegapresearch.org/_asset/dqzf6p/SS_2012_report.pdf).
- <sup>7</sup> Berkeley Media Studies Group. The soda and fast food industries target their marketing towards mothers of color. Berkeley Media Studies Group . 2010. 12-19-2012. Accessed on February 17, 2015 at <http://www.bmsg.org/resources/publications/the-soda-and-fast-food-industries-target-their-marketing-towards-mothers-of-color>.
- <sup>8</sup> 18. Grier SA KS. Targeted marketing and public health. *Annu Rev Public Health* 2010;31:349-69.
- <sup>9</sup> 19. Harris JL, Schwartz MB, Brownell KD, Sarda V, Dembek C, Munsell C, et al. Cereal FACTS 2012: Limited progress in the nutrition quality and marketing of children's cereals. 2012. New Haven, CT, Rudd Center for Food Policy and Obesity. 11-15-2012. Accessed on February 17, 2015 at [http://www.cerealfacts.org/media/cereal\\_facts\\_report\\_2012\\_7.12.pdf](http://www.cerealfacts.org/media/cereal_facts_report_2012_7.12.pdf).
- <sup>10</sup> 20. Kunkel D, Mastro D, Ortiz M, McKinley C. Food marketing to children on U.S. Spanish-language television. *J Health Commun* 2013;18(9):1084-96.
- <sup>11</sup> Data brief: weight, nutrition, and physical activity among Philadelphia youth. July 2014. Philadelphia Department of Public Health. [http://www.phila.gov/health/pdfs/YRBSobesitydatabrief\\_81314.pdf](http://www.phila.gov/health/pdfs/YRBSobesitydatabrief_81314.pdf).
- <sup>12</sup> Trost SG, McCoy TA, Vander Veur SS, Mallya G, Duffy ML, Foster GD. Physical activity patterns of inner-city elementary schoolchildren. *Med Sci Sports Exerc*. 2013 Mar;45(3):470-4.
- <sup>13</sup> Sweeting HN. Gendered dimensions of obesity in childhood and adolescence. *Nutr J*. 2008; 7: 1.
- <sup>14</sup> Trost SG, McCoy TA, Vander Veur SS, Mallya G, Duffy ML, Foster GD. Physical activity patterns of inner-city elementary schoolchildren. *Med Sci Sports Exerc*. 2013 Mar;45(3):470-4.