

# Fit Kids Body Mass Index Screening Project

A Survey of Westchester County Elementary School Children  
in Kindergarten, Second, and Fourth Grades,  
School Years 2005-06/2006-07 From Select School Districts

May 2007



# Fit Kids Body Mass Index Screening Project Report

Westchester County Department of Health  
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## Introduction

The prevalence of obesity among our nation's children has increased over the past few decades and the statistics are alarming. According to the National Health and Nutrition Examination Survey (NHANES), the prevalence rates of overweight or at risk of becoming overweight for children aged 2-19 years were 28.2%, 30.0% and 33.6% in 1999-2000, 2001-2002, and 2003-2004 respectively. For children aged 6-11 years, the rates for the three successive years were 29.8%, 32.2%, and 37.2%. Childhood obesity is highly correlated to obesity in adulthood, as well as to conditions such as diabetes and hypertension.

Despite the seriousness of this problem, surprisingly little data are available that describe the extent of overweight among children at the county level. The Fit Kids Body Mass Index Screening Project was initiated by the Westchester County Department of Health (WCDH) to estimate the extent to which school-aged children in Westchester County are overweight or at risk of becoming overweight compared to national statistics, and to determine whether there are differences by school grade and by sex.

## Methodology

In June 2006, the Westchester County Department of Health (WCDH) sent out a survey to all school districts in Westchester County to assess at which grades height and weight measurements of students were collected, and to invite schools to partner with the WCDH on the Fit Kids Body Mass Index Screening Project aimed at estimating the rate of childhood obesity in the County. To be consistent with elementary grades where health certificates are required by New York State Education law, WCDH decided to obtain and review data for grades K, 2 and 4. School districts that expressed willingness to partner with WCDH on the project were contacted. Follow-up letters and calls were made to those districts that had not responded to the survey to encourage their participation.

Due to the timing of the data collection, elementary schools were given the option to submit data on the previous school year (2005-2006), the current school year (2006-2007), or both years. Data were submitted by the schools on a standard form prepared by WCDH. Schools were also given the option of submitting the data electronically. Data elements collected included height, weight, gender, date of measurements, month and year of birth (day of birth was excluded for increased confidentiality), grade, and school year.

The measurements submitted were either taken by the child's personal physician or the school's health practitioner. Body Mass Index (BMI) was calculated for each child as weight in pounds divided by height in inches squared and multiplied by a factor of 703.<sup>1</sup> To assess the child's body weight status, records were grouped into four weight categories, overweight (BMI $\geq$ 95<sup>th</sup> percentile), at risk of overweight (BMI 85<sup>th</sup> percentile to <95<sup>th</sup> percentile), healthy weight (BMI 5<sup>th</sup> percentile to <85<sup>th</sup> percentile), and underweight (BMI<5<sup>th</sup> percentile), as defined by the CDC's sex and age specific classifications for BMI percentiles. Data were combined to provide a summary of obesity levels at the county, district and school levels.

During September 2006 to May 2007, WCDH collected and analyzed data from 19 of the 40 Westchester County school districts, representing 41 of the 141 public elementary schools and 8,600 of approximately 32,000 children in public grades K, 2, and 4 in the County. For weighting purposes, only one year of data (the year with the greatest number of records) was selected for each school for computation of the Westchester County obesity level. As part of agreeing to participate in the project, WCDH assured schools that neither individual school nor district level data would be released. However, each district will receive a customized report showing the results for its district and its participating schools, which includes analysis of all data submitted.

## **Results**

Among the 8,600 children included in the study, 17.2% of children are overweight and an additional 16.8% are at risk of becoming overweight. Thus, more than 1 in 3 children (34.0%) fall into the combined category of overweight or at risk of overweight, compared to the national level of

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<sup>1</sup> Centers for Disease Control (CDC). Overweight and obesity: defining overweight and obesity. Atlanta, GA: US Department of Health and Human Services, CDC; 2005. Available at <http://www.cdc.gov/nccdphp/dnpa/obesity/defining.htm>.

32.2% among children aged 4-10 in 2003-2004.<sup>2</sup> Overall, Westchester County has a statistically significant higher percentage of children overweight or at risk of overweight (34.0%).<sup>3</sup>

**Percent of Westchester County Elementary School Aged Children (K,2,4) by Body Weight Status  
Compared with National Estimates  
All Participating Schools, 2005-06/2006-07 School Year**

<b>Body Weight Status</b>	<b>BMI-for-Age Range</b>	<b>Westchester</b>	<b>National (Age 4-10)</b>
Underweight	<5 <sup>th</sup> Percentile	3.3	3.5
Healthy weight	5 <sup>th</sup> to <85 <sup>th</sup> Percentile	62.7	64.3
At risk of overweight	85 <sup>th</sup> to <95 <sup>th</sup> Percentile	16.8	15.3
Overweight	≥95 <sup>th</sup> Percentile	17.2	16.9
<b>Overweight or at risk of overweight</b>	<b>≥85<sup>th</sup> Percentile</b>	<b>34.0</b>	<b>32.2</b>

Compared to the national estimates by gender, the prevalence rate of overweight or at risk of overweight among the children in the WCDH study is only significantly higher for males. The percent of overweight and at risk of overweight among Westchester male students is 36.5% compared to 33.6% at the national level.

**Prevalence of Overweight or At Risk of Overweight by Sex and Grade  
All Participating Schools, 2005-06/2006-07 School Year**

<b>Grade</b>	<b>Number of cases</b>	<b>Overweight and at risk for overweight</b>					
		<b>Female</b>		<b>Male</b>		<b>Total</b>	
		<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>
K	2,793	409	30.3	501	34.7	910	32.6
2	2,887	470	32.2	493	34.6	963	33.4
4	2,920	439	31.5	611	40.0	1050	36.0
<b>Total</b>	<b>8,600</b>	<b>1,318</b>	<b>31.4</b>	<b>1,605</b>	<b>36.5</b>	<b>2,923</b>	<b>34.0</b>
<b>National Estimates (Age 4-10)</b>	<b>1,211</b>	<b>214</b>	<b>30.7</b>	<b>207</b>	<b>33.6</b>	<b>421</b>	<b>32.2</b>

<sup>2</sup> WCDH, under the guidance of CDC staff members, analyzed the 2003-2004 NHANES data used for calculating the BMI levels among children 2-19. From these data, it is estimated that 32.2% of the children aged 4 to 10 were overweight or at risk of overweight at the national level (standard error: 1.4). The percent of overweight or at risk of overweight for females and males are 30.7% (SE: 2.0) and 33.6% (SE: 2.0), respectively. These estimates were calculated using the survey weights originally developed by NHANES.

<sup>3</sup> Significant at 0.001.

Among all the students (grades K, 2 and 4) included in the WCDH study, males are more likely to be overweight or at risk of overweight than females. When comparing the prevalence rate by sex for each grade individually, the difference was statistically significant among Kindergarteners and fourth graders<sup>4</sup>.

When assessing the prevalence rate by grade, there was a statistically significant difference between the fourth graders and the kindergarteners, as well as between the fourth graders and the second graders.<sup>5</sup> There was no significant difference between the second graders and the kindergarteners.

Of the 41 schools in the study, 13 schools, representing 32.8% of children in the study, have a prevalence rate of overweight or at risk of overweight that is significantly higher than the national level. Ten of the 41 schools, representing 25.4% of the children in the study, have a prevalence rate that is significantly lower than the national level. The prevalence rates in the other 18 schools are similar to the national estimate.

## **Discussion**

The analysis from the 41 participating elementary schools reveals that children from these schools are at a higher rate of overweight or at risk of overweight than the national level. Since the participation in this project was completely voluntary and not based on a representative sample, it is not possible to simply generalize the findings to all Westchester County students in grades K, 2 and 4. Literature has documented that differences exist by race and ethnicity, with blacks and Hispanics more likely to be overweight or at risk of overweight. WCDH compared the race/ethnicity distribution of the 41 participating schools with the distribution of all public schools in Westchester County (based on SY 2004–2005 enrollment) to determine if any significant differences existed between the two groups. The percentage of both non-Hispanic blacks and Hispanics was higher for all public schools compared to the 41 participating schools in the project. Given this finding, WCDH concluded that the overall prevalence of overweight or at risk of overweight for children in grades K, 2, and 4 in all public schools within the County would still be higher than the national level and that the data represented by this sample may understate the prevalence of obesity among elementary school-aged children in Westchester.

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<sup>4</sup> Significant at 0.001.

<sup>5</sup> Significant at 0.05.

**Percent Distribution of Students (K, 2, 4) by Race/Ethnicity  
Westchester County Public Schools, School Year 2004-05\***

<b>Race/Ethnicity</b>	<b>Participating Schools</b>	<b>All Schools</b>
Black, Non-Hispanic	9.4	16.2
White, Non-Hispanic	63.0	55.7
Hispanic	20.5	22.0
Other	7.1	6.1
Total	100	100
<b>Total Number of Schools</b>	<b>41</b>	<b>141</b>

\* New York State Department of Education.

The adopted 2007-08 New York State budget includes an initiative that would require Body Mass Index (BMI) and weight status categories of students be assessed twice at the elementary and secondary levels, and reported on mandatory school health certificates by a sampling of schools and school districts. In the meantime, the WCDH continues to work with schools that have expressed interest in voluntarily participating in the County project. Individual reports will be provided to each school and school district. As appropriate, the County level report will be updated to incorporate the data submitted by new participating schools.

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