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HEALTH ECONOMICS AND EVALUATION RESEARCH

Beach Cities Health District BMI Data Clean-up and Analysis of the LiveWell Kids (LWK) Program

UCLA Center for Health Policy Research

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Contents

Background.....	3
The LiveWell Kids Program.....	3
Program Intervention Activities	3
Data Source.....	4
Data Quality and Cleaning.....	4
Identifying BMI Outliers	4
Categorizing Race and Language Data	5
Mapping School Codes and Names.....	8
Creating Weight Classification Categories	9
Final LiveWell Kids Data and Data Analysis Methods	9
Findings.....	11
Student Characteristics	11
Program Outcomes	13
Appendix A: Stature to Age and Weight for Age Percentiles; Body Mass Index-for-age Percentiles (by gender)	
Appendix B: Data book.....	19
Appendix C: LWK Data Dictionary	30
Appendix D: References.....	32

Beach Cities Health District BMI Data Clean-up and Analysis of the LiveWell Kids (LWK) Program

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Background

The Beach Cities Health District (BCHD) implemented the LiveWell Kids (LWK) program to deliver nutrition education through teachers and parent docents during the school year. The UCLA Center for Health Policy Research (the Center) was selected to clean-up and analyze LWK Body Mass Index (BMI) data. The Center has prepared a report using data collected by BCHD to evaluate demographic characteristics and BMI trends of students participating in the LWK program. The results and data cleaning methods are presented in this report.

The LiveWell Kids Program

The program uses evidence-based interventions to modify factors contributing to the rising level of childhood obesity. Beach Cities Health District (BCHD) sponsors LiveWell Kids (LWK) at all eight elementary schools in Redondo Beach Unified School District (RBUSD), Hermosa Beach City School District (HBCSD), and Manhattan Beach Unified School District (MBUSD). The programs goals include:

- Increase physical activity
- Improve children's knowledge and behaviors regarding healthy eating
- Increase children's access to and consumption of healthy foods including fruits and vegetables
- Provide parents with nutrition knowledge

Program Intervention Activities

Nutrition Education

Parent docents deliver behavioral and interactive nutrition lessons. BCHD staff train docents in a train-the-trainer model; parent docents schedule lesson deliveries with teachers, prepare lesson materials, teach five nutrition lessons, and provide exposure to the flavors of healthy food. The curriculum incorporates nutrition education, controlled breathing exercises, mindfulness awareness education, and food sampling. Program support materials such as parent newsletters are also developed and provided.

Physical Activity

BCHD provides schools and teachers with year-long physical activity interventions. RBUSD teachers in 1st-5th grades receive 12 lessons and mentorship from BCHD PE Specialists. RBUSD, HBCSD, and two MBUSD elementary schools are provided with exercise and mindfulness soundtracks and instructions that are designed to engage the entire student body. Lessons are developmentally appropriate for students of all ages and skill levels. Students receive an additional 40 minutes of activity each week from the program.

Garden Education

RBUSD schools work with BCHD to design and build school gardens. Students, teachers, and parent docents work together planting, cultivating, harvesting and maintaining the gardens. Each grade receives six garden lessons a year.

Fresh Fruits and Vegetables

BCHD works in partnership with RBUSD Food Service to fund the purchase of farm fresh fruits and vegetables five days a week for school salad bars.

Parent Education

BCHD provides take-home activities for parents and children that support classroom learning. LiveWell Kids Parent Newsletters are sent home throughout the year. Parents are encouraged to exercise with their children, volunteer at school gardens, and practice mindful eating. Parents are also informed of their child's BMI via letters that are provided by BCHD to the schools.

Data Source

BMI data was collected from RBUSD elementary schools from school year 2007/2008 through 2013/2014. Two measurements were collected from 2007 to 2011 (fall and spring) and one measurement was collected from 2011 to 2014 (fall).

Children's body composition was measured by BCHD sponsored registered nurses and entered into the Costec software tracking system. BMI for children is assessed using the Centers for Disease Control and Prevention (CDC) guidelines. For children and teens, BMI is age- and sex-specific, and is often referred to as BMI-for-age (Appendix A: Stature to Age and Weight for Age Percentiles; Body Mass Index-for-age Percentiles).

After BMI is calculated for children and teens, the BMI number is plotted on the CDC BMI-for-age growth charts (for either girls or boys) to obtain a percentile ranking. The percentile indicates the relative position of the child's BMI number among children of the same sex and age. Growth charts show the weight status categories used with children. The CDC BMI-for-age growth charts are available at: CDC Growth Charts: United States.

Data Quality and Cleaning

A thorough assessment of data quality and data cleaning was required before analysis of BMI data could be achieved. There were four major data cleaning steps: identifying outliers in the BMI data for exclusion from analysis; categorizing race/ethnicity and language variables into standard groups that could be analyzed across all years of data; mapping school names to school codes; and creating a variable to identify underweight, healthy weight, overweight, and obese children.

Identifying BMI Outliers

Data management and analysis was conducted using SAS statistical software. SAS was preferred over other statistical software packages because of its compatibility with the CDC's SAS program for calculating percentiles and standard deviations (z-scores) for a child's BMI based on the CDC growth charts

(<http://www.cdc.gov/nccdphp/dnpao/growthcharts/resources/sas.htm>). One advantage of the CDC SAS program is its ability to identify BMI observations that are considered extreme. The SAS code automatically flags extreme, or biologically implausible values (BIVs), in the dataset. These BIV flag variables are coded as -1 (modified z-score is extremely low), +1 (modified z-score is extremely high), or 0 (modified z-score is between these 2 cut-points). More information about the cutoffs used to define outliers can be found here:

<http://www.cdc.gov/nccdphp/dnpa/growthcharts/resources/BIV-cutoffs.pdf> . The extreme value flags are included in the datasets under the variable names: bivbmi (first measurement) and bivbmi_second (second measurement). Extreme BMI values that were considered biologically impossible were excluded from the analysis. Exhibit 1 presents the number of extreme BMI observations identified at each assessment using the CDC algorithm.

Exhibit 1: Number of Extreme BMI Observations Identified Using the CDC Algorithm

Year	First Assessment (Fall)	Second Assessment (Spring)
2007/2008	17	6
2008/2009	12	8
2009/2010	10	8
2010/2011	9	7
2011/2012	8	Not Applicable
2012/2013	10	Not Applicable
2013/2014	4	Not Applicable

Categorizing Race and Language Data

Race was grouped according to the criteria that the Census adheres to, the Office of Management and Budget (OMB) Directive 15: Race and Ethnic Standards for Federal Statistics and Administrative Reporting (http://www.whitehouse.gov/omb/fedreg_1997standards).

BCHD collects racial and ethnic data in a combined format. UCLA attempted to categorize race and ethnicity in accordance with the minimum acceptable categories defined in OMB Directive 15: American Indian or Alaskan Native; Asian; Native Hawaiian or Other Pacific Islander; Black, not of Hispanic Origin; Hispanic or Latino; and White, not of Hispanic origin. The American Indian or Alaskan Native category was not consistently coded in LWK data, and was missing in 2007/2008, 2010/2011, and 2013/2014. Due to this limitation, UCLA was unable to identify American Indian or Alaskan Native individuals in a separate category, and those designated as American Indian or Alaskan Native were included in the Other category. A combined Asian or Pacific Islander category was used because BCHD LWK data does not separate Asian and Native Hawaiian or Other Pacific Islander.

There were nearly thirty variations of race/ethnicity found in the LWK data before the data was grouped into six standard race/ethnicity categories. The crosswalk between the original race variable and the variable created by UCLA, `race_group`, can be found in Exhibit 2, and is defined as follows:

- **Asian American or Pacific Islander:** A person having origins in the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes, for example, China, India, Japan, Korea, the Philippine Islands, and Samoa.
- **African American:** A person having origins in any of the racial groups of Africa.
- **Hispanic/Latino:** A person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race.
- **White:** A person having origins in Europe, North Africa, or the Middle East.
- **Other:** A person whose race/ethnicity does not fall into the other defined categories. Other includes American Indian or Alaskan Native persons having origins in North America, and who maintain cultural identification through tribal affiliation or community recognition.
- **Unknown:** Missing within the BMI tracking system or listed as unknown or declined to state.

Exhibit 2: Mapping Race/Ethnicity in LiveWell Kids Data

Race	Race_group
African-American	African American
American Indian or Alaska Native	Other
AmericanIndianorAlaskanNative	Other
Asian Indian	Asian American/Pacific Islander
Asian/Pacific Islander	Asian American/Pacific Islander
Asian/PacificIslander	Asian American/Pacific Islander
Black/African American	African American
Cambodian	Asian American/Pacific Islander
Caucasian	White
Chinese	Asian American/Pacific Islander
Declined to state	Unknown
Ethnicity Unknown	Unknown
EthnicityUnknown	Unknown
Filipino	Asian American/Pacific Islander
Guamanian	Asian American/Pacific Islander
Hawaiian	Asian American/Pacific Islander
Hispanic	Hispanic/Latino
Japanese	Asian American/Pacific Islander
Korean	Asian American/Pacific Islander
Laotian	Asian American/Pacific Islander
Other	Other
Other Asian	Asian American/Pacific Islander
Other Pac. Islander	Asian American/Pacific Islander
Other Pacific Isl	Asian American/Pacific Islander
Samoan	Asian American/Pacific Islander
Tahitian	Asian American/Pacific Islander
Vietnamese	Asian American/Pacific Islander
White	White

UCLA used the census guidelines to recode language into four major language groups: 1. English only; 2. Spanish, 3. Asian and Pacific Island languages, and 4. All Other Languages. Indo-European languages were included in the All Other Languages category due to the small number of students who spoke an Indo-European language. More information about the census guidelines for grouping language can be found:

<http://www.census.gov/hhes/socdemo/language/about/index.html>. The crosswalk between the original language variable and the variable created by UCLA, language_group, can be found in Exhibit 3.

Exhibit 3: Mapping Language in LiveWell Kids Data

Language	language_group
Albanian	All Other Languages
Albanina	All Other Languages
All other non-English languages	All Other Languages
Arabic	All Other Languages
Armenian	All Other Languages
Assyrian	All Other Languages
Cantonese	Asian and Pacific Island Languages
Chaozhou	Asian and Pacific Island Languages
Chaozhou(Chaochow)	Asian and Pacific Island Languages
Chaozhou(Chiuchow)	Asian and Pacific Island Languages
Dutch	All Other Languages
English	English Only
Farsi(Persian)	All Other Languages
Filipino	Asian and Pacific Island Languages
Filipino(Pilipino or Tagalog)	Asian and Pacific Island Languages
FilipinoPortuguese	Asian and Pacific Island Languages
FilipinoVietnamese	Asian and Pacific Island Languages
French	All Other Languages
German	All Other Languages
Greek	All Other Languages
Gujarati	All Other Languages
Hebrew	All Other Languages
Hindi	All Other Languages
Hungarian	All Other Languages
Indonesian	Asian and Pacific Island Languages
Italian	All Other Languages
Japanese	Asian and Pacific Island Languages
Khmer	Asian and Pacific Island Languages
Khmer(Cambodian)	Asian and Pacific Island Languages
Korean	Asian and Pacific Island Languages
KoreanCantonese	Asian and Pacific Island Languages
KoreanEnglish	Asian and Pacific Island Languages
KoreanFilipino	Asian and Pacific Island Languages
KoreanSpanish	Asian and Pacific Island Languages
Mandarin	Asian and Pacific Island Languages
Mandarin(Putonghua)	Asian and Pacific Island Languages
Other	All Other Languages
OtherNon-English	All Other Languages
Pashto	All Other Languages
Philpino(Tagalog)	Asian and Pacific Island Languages
Polish	All Other Languages
Portuguese	All Other Languages

Language	language_group
Rumanian	All Other Languages
Russian	All Other Languages
Samoan	Asian and Pacific Island Languages
Serbo-Croatian	All Other Languages
Serbo-Croatian(Bosnian,Croatian,Serbian)	All Other Languages
Spanish	Spanish
Taiwanese	Asian and Pacific Island Languages
Thai	Asian and Pacific Island Languages
Tongan	Asian and Pacific Island Languages
Turkish	Asian and Pacific Island Languages
Ukrainian	All Other Languages
Urdu	All Other Languages
Vietnamese	Asian and Pacific Island Languages
VietnameseKorean	Asian and Pacific Island Languages
VietnameseMandarin	Asian and Pacific Island Languages
VietnameseSpanish	Asian and Pacific Island Languages

Mapping School Codes and Names

A school name variable was added to the dataset to identify the name of the elementary school that each student attended. It was important to match the numeric school codes to the school name because the codes changed in school year 2011/2012. The final LWK dataset includes the sch_name variable, in addition to the original sch_code variable. Any further analysis should be conducted using the sch_name variable, rather than the sch_code variable for uniformity across years. The variable sch_name is mapped to the school codes in Exhibit 4. Invalid school codes (11, 16, 2, 5, 6, 7, and 14) were found in school years 2010/2011 and 2011/2012. UCLA determined that records with invalid school codes did not have a BMI assessment and were provided for students in grades 6 through 12, suggesting that the students were in middle or high school and should not have been included in the LWK BMI data. Records were excluded from the analysis and from the final dataset.

Exhibit 4: Mapping School Codes in LiveWell Kids Data

Elementary School	2007/2007	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014
Alta Vista School	1110001	1110001	1110001	1110001	1110001	1110001	1110001
Beryl Heights School	1110002	1110002	1110002	1110002	1110003	1110003	1110003
Birney School	1110003	1110003	1110003	1110003	1110004	1110004	1110004
Jefferson School	1110004	1110004	1110004	1110004	1110008	1110008	1110008
Lincoln School	1110005	1110005	1110005	1110005	1110009	1110009	1110009
Madison School	1110006	1110006	1110006	1110006	1110010	1110010	1110010
Tulita School	1110007	1110007	1110007	1110007	1110012	1110012	1110012
Washington School	1110008	1110008	1110008	1110008	1110013	1110013	1110013

Creating Weight Classification Categories

Percentiles were calculated using the CDC algorithm

(<http://www.cdc.gov/nccdphp/dnpao/growthcharts/resources/sas.htm>). BMI outcomes were measured according to the CDC's classification of underweight, healthy weight, overweight, and obese (Exhibit 5). UCLA created two variables, bmicat (first measurement) and bmicat_second (second measurement), which identify the child's weight status category at each screening.

Exhibit 5: BMI-for-Age Weight Status Categories and Percentiles

Weight Status Category	Percentile Range
Underweight	Less than the 5th percentile
Healthy weight	5th percentile to less than the 85th percentile
Overweight	85th to less than the 95th percentile
Obese	Equal to or greater than the 95th percentile

Source: Centers for Disease Control and Prevention, http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html

Final LiveWell Kids Data and Data Analysis Methods

The final dataset includes all of the data fields in the original LWK data file transferred to UCLA. Additionally, UCLA added the following variables during the data cleaning process: race_group, language_group, sch_name, bmicat, bmicat_second, bmicat_second, bmicat_second. The data dictionary for the clean dataset can be found in Appendix C: LWK Data Dictionary.

Though all students in the Redondo Beach School Unified District participated in LWK, BMI assessments were not a mandatory component of the program. Students who were absent on the day of the measurement or whose parents requested that they be withdrawn from BMI measurement were not included in the analysis. Exhibit 6 provides information on the percent of students participating in LiveWell Kids with valid BMI measurements.

Exhibit 6: RBUUSD Student Participation in BMI Assessments by School Year

	Total Participating Students	Percent with a Valid BMI Measurement	
		First Assessment (Fall)	Second Assessment (Spring)
2007/2008	3,867	47%	58%
2008/2009	4,050	91%	86%
2009/2010	4,157	93%	85%
2010/2011	4,150	90%	84%
2011/2012	4,225	91%	Not Applicable
2012/2013	4,346	87%	Not Applicable
2013/2014	4,407	84%	Not Applicable

In school year 2007/2008, BMI assessments were missing for all grade levels at Beryl Heights, Jefferson, and Tulita Elementary Schools, and kindergarten assessments were missing in the fall for Birney and Washington Elementary Schools. A comprehensive data book, Appendix B, includes the number of students with a valid BMI, ranging from just over 240 students to nearly 650 students in each school. Additionally, the data book includes the number and proportion of obese, overweight, healthy weight, and underweight elementary school students by school and grade level. Districtwide numbers and rates of obese, overweight, healthy weight, and underweight students are presented by race/ethnicity.

Trends in the LWK data were examined for demographic characteristics and BMI outcomes. Demographic characteristics are presented for race/ethnicity and language by school year. BMI outcomes are presented for the overall district, and by race/ethnicity and school. The median percent change between the two measurements in fall and spring was calculated to observe annual differences in pre and post-program measurements for students who were in the overweight/obese range. The percent change was used, rather than raw BMI, since children grow during the year. The median percent of overweight/obese kids in the spring was subtracted from the value in the fall when two measurements were collected during school years 2007/2008 through 2010/2011.

Findings

Student Characteristics

Languages Spoken by Redondo Beach Unified School District Students

- Most students spoke English only; in school year 2013/2014, only 16% of students participating in LiveWell Kids spoke another language (Exhibit 7).
- There was a decrease in the percent of students who spoke a language other than English from school year 2007/2008 to 2013/2014, with the decline primarily among Spanish speakers (Exhibit 8).
- While the prevalence of Spanish speakers declined from 10% to 7% from school year 2007/2008 to 2013/2014, the prevalence of students speaking only English increased from 81% to 85%.

Exhibit 7: Language of Students Participating in the LiveWell Kids Program, Redondo Beach School District 2013/2014.

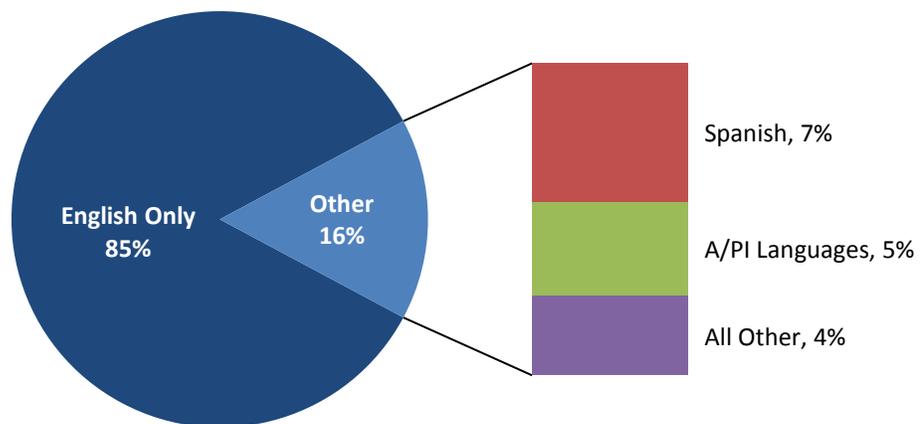


Exhibit 8: Language of Students Participating in the LiveWell Kids Program, Redondo Beach School District, 2007/2008 – 2013/2014.

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014
English Only	81%	83%	83%	83%	84%	84%	85%
Spanish	10%	10%	8%	8%	7%	7%	7%
Asian /Pacific Island Languages	5%	5%	5%	5%	4%	4%	5%
All Other Languages	4%	2%	5%	5%	4%	4%	4%

Race/Ethnicity of Redondo Beach Unified School District Students

- In the most recent school year (2013/2014), 67% of students were White; 15% were Hispanic/Latino, 11% were Asian American/Pacific Islander, 5% were African American, and 3% indicated another race/ethnicity (Exhibit 9).
- There was a decrease in the prevalence of African American, Asian American/Pacific Islander, and Hispanic/Latino students from school year 2007/2008 to 2013/2014, with the greatest decline in Hispanic/Latino students (Exhibit 10).

Exhibit 9: Race/Ethnicity of Students Participating in the LiveWell Kids Program, Redondo Beach School District 2013/2014

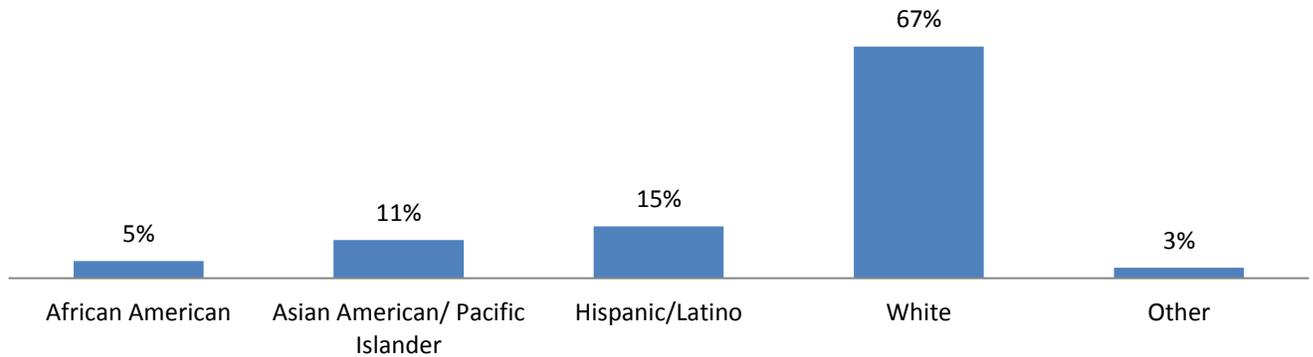


Exhibit 10: Race/Ethnicity of Students Participating in the LiveWell Kids Program, Redondo Beach School District, 2007/2008 – 2013/2014.

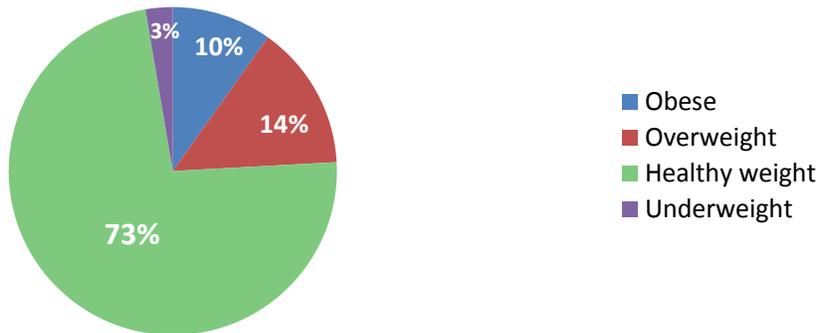
	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014
African American	7%	6%	5%	5%	5%	5%	5%
Asian American/Pacific Islander	17%	16%	14%	16%	15%	13%	11%
Hispanic/Latino	22%	21%	19%	17%	16%	16%	15%
White	53%	55%	57%	60%	63%	64%	67%
Other	2%	2%	4%	2%	2%	3%	3%

Program Outcomes

One in Four RBUSD Elementary School Students are Overweight or Obese

- Most RBUSD elementary students were in the healthy range for BMI; in school year 2013/2014, approximately 25% of students were overweight or obese (Exhibit 11).
- Obesity rates in Redondo Beach were lower than nationwide rates. In 2012, nearly 18% of children (6-11 years) in the nation were considered obese compared to 10% in Redondo Beach during the same period.
- Obese youth are at higher risk for cardiovascular disease, prediabetes, bone and joint problems, sleep apnea, and social and psychological problems.

Exhibit 11. Percent of Students who are Obese, Overweight, Healthy Weight, and Underweight, Redondo Beach School District 2013/2014

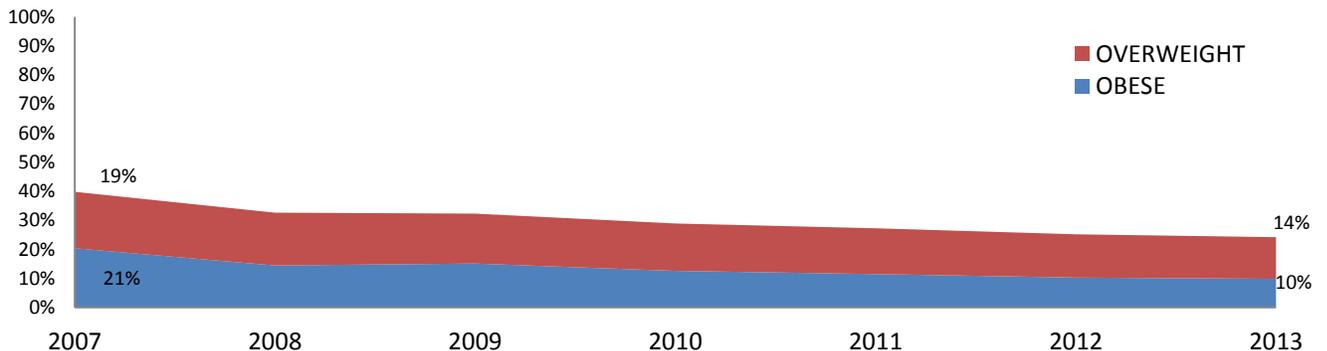


Notes: BMI assessments are voluntary. Students who did not participate in the BMI assessment and biologically impossible observations are not included in this analysis. Weight classifications are based on child's sex and BMI for age.

Obesity Rates Have Declined Districtwide from Fall 2007 to Fall 2013

- The percentage of students with a BMI in the overweight/obese range has declined over the course of the LiveWell Kids program (Exhibit 12). There is insufficient evidence to indicate whether this change can be directly attributed to LWK.
- From 2007 to 2013, the proportion of students who were obese in the Redondo Beach School District declined by 26% and the proportion of students who were overweight declined by 50%.
- In contrast, rates of obesity have more than doubled nationwide in the past 30 years. The percentage of children aged 6-11 years in the United States who were obese increased from 7% in 1980 to nearly 18% in 2012.

Exhibit 12: Percent of Students Participating in the LiveWell Kids Program who are Obese or Overweight, Redondo Beach School District Fall 2007 through Fall 2013

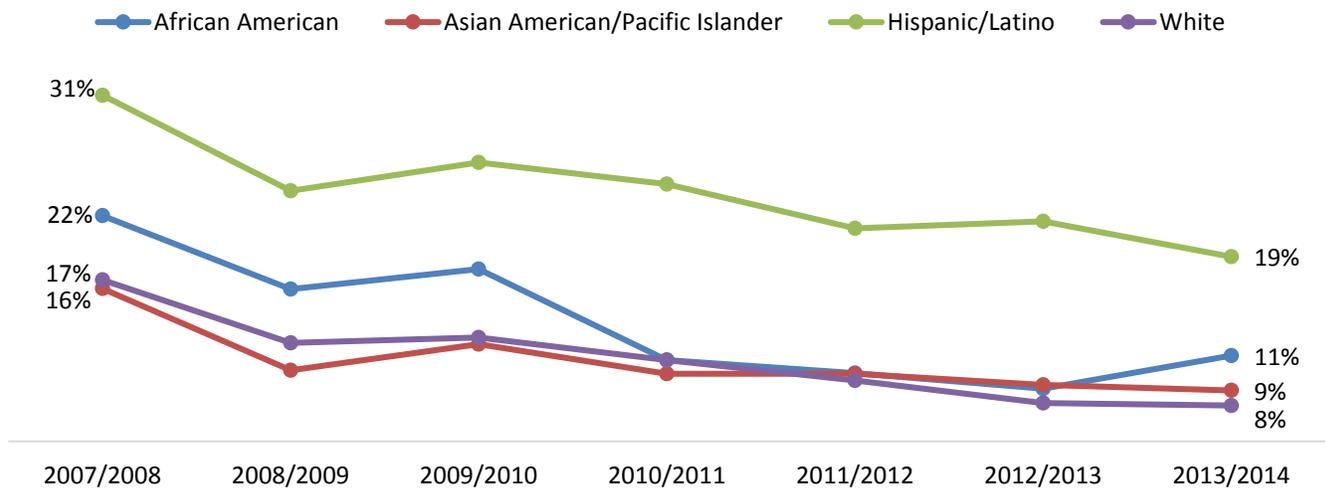


Notes: BMI assessments are voluntary. Students who did not participate in the BMI assessment and biologically impossible observations are not included in this analysis. Weight classifications are based on child's sex and BMI for age.

Obesity Rates are Highest Amongst Hispanic/Latino Students

- Hispanic/Latino elementary students were more likely to be obese, with rates twice as high as White and Asian American/Pacific Islander students (Exhibit 13). The higher prevalence of obesity among Hispanic/Latino children places them at greater risk of developing chronic diseases.
- Obesity rates have declined for all race/ethnicity groups, however rates for Hispanic/Latino children have declined at a slower pace. From 2007 to 2014, obesity rates declined by 39% for Hispanic/Latino children compared to a 53% decline for White children.

Exhibit 13. Percent of Students who are Obese by Race/Ethnicity, Redondo Beach School District 2007/2008-2013/2014

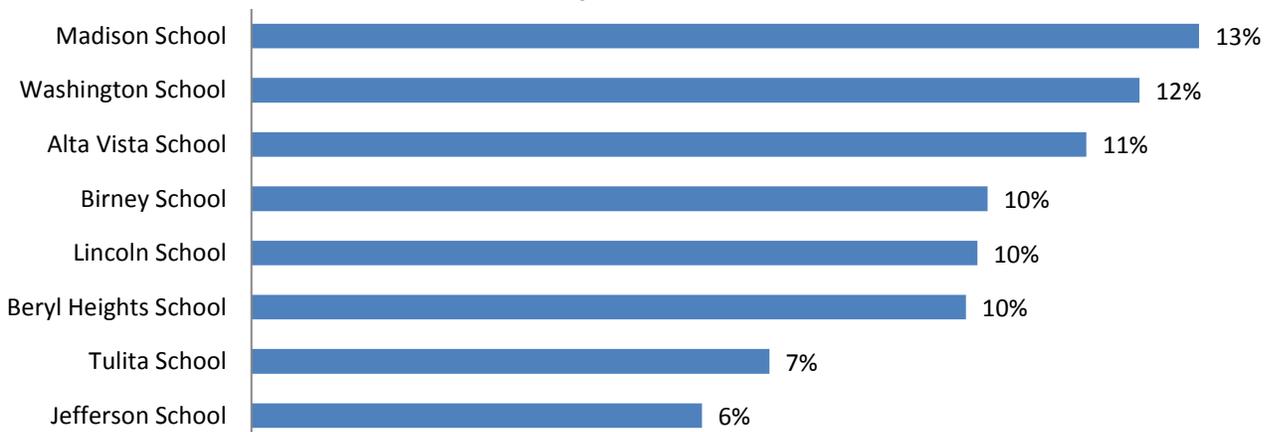


Notes: BMI assessments are voluntary. Students who did not participate in the BMI assessment and biologically impossible observations are not included in this analysis. Weight classifications are based on child's sex and BMI for age.

Obesity Rates Vary by School

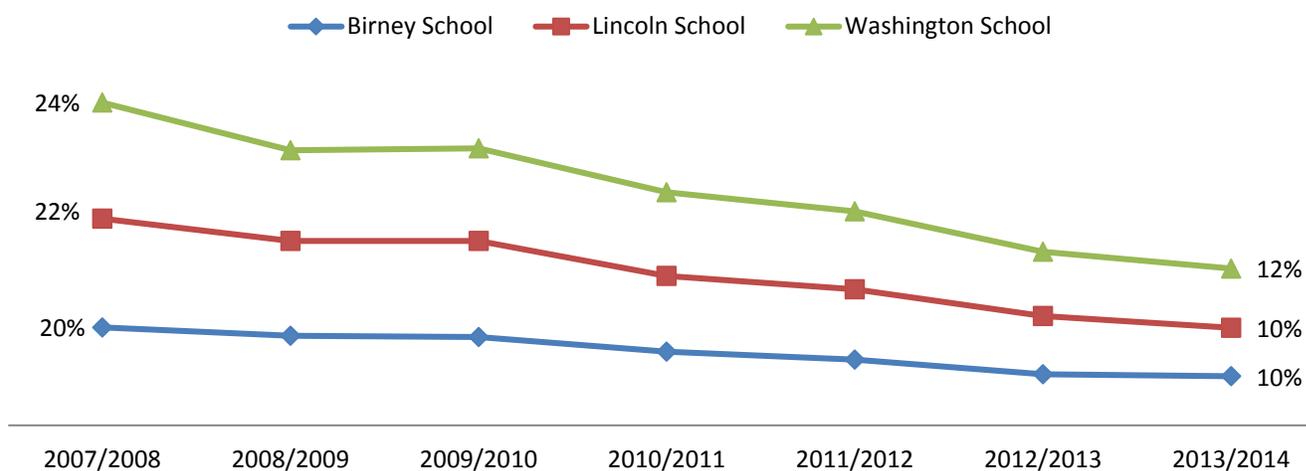
- For the most recent school year 2013/2014, the school with the lowest percent of students in the obese range was Jefferson Elementary School, about 6%. The highest percent of students in the obese range was Madison Elementary School, about 13% (Exhibit 14).
- From 2007 to 2013 there was a 55% decline in the proportion of students who were obese at Lincoln Elementary School, and a 50% decline at Birney and Washington Elementary Schools (Exhibit 15).

Exhibit 14. Percent of Students Who are Obese by School, Redondo Beach School District 2013/2014



Notes: BMI assessments are voluntary. Students who did not participate in the BMI assessment and biologically impossible observations are not included in this analysis. Weight classifications are based on child's sex and BMI for age.

Exhibit 15. Top Three Redondo Beach School District Schools with the Largest Decline of Students Who are Obese, Fall 2007 through Fall 2013



Notes: BMI assessments are voluntary. Students who did not participate in the BMI assessment and biologically impossible observations are not included in this analysis. Weight classifications are based on child's sex and BMI for age.

Overweight/Obesity Rates Significantly Decline During the School Year

- There was a significant decline in the percent of students who were overweight or obese in the spring (post-program) compared to fall (pre-program), in all schools except Alta Vista and Tulita in 2008/2009 ($p < .05$) (Exhibit 16).

Exhibit 16. Median Percent Change of Children who are Obese or Overweight in Pre (Fall) compared to Post-Program (Spring), Redondo Beach School District 2007/2008-2010/2011

	2007/2008		2008/2009		2009/2010		2010/2011	
	Median Change	P Value	Median Change	P Value	Median Change	P Value	Median Change	P Value
Alta Vista School	-0.82	0.0001	-0.13	0.43	-1.20	<.0001	-0.81	<.0001
Beryl Heights School	Data unavailable		-0.37	0.0004	-0.77	0.0004	-1.71	<.0001
Birney School	-0.80	0.0003	-0.45	0.0002	-0.56	0.0018	-1.38	<.0001
Jefferson School	Data unavailable		-0.66	<.0001	-1.21	<.0001	-0.94	<.0001
Lincoln School	-0.71	<.0001	-0.21	0.0223	-0.67	<.0001	-1.07	<.0001
Madison School	-0.88	<.0001	-0.64	<.0001	-0.57	0.0005	-0.93	<.0001
Tulita School	Data unavailable		-0.15	0.175	-1.13	<.0001	-0.62	0.0049
Washington School	-0.68	<.0001	-0.56	<.0001	-0.17	0.0035	-0.83	<.0001

Notes: BMI assessments are voluntary. Students who did not have valid BMI measurements for both fall and spring assessments were excluded from the analysis. Weight classifications are based on child's sex and BMI for age. Median percent change was calculated when BMI was measured twice during the school year. Two measurements were collected in fall and spring during school years 2007/2008 to 2010/2011. One measurement was collected in the following years.

Recommendations for Future Analysis

UCLA recommends that BCHD clean, validate, and analyze LiveWell Kids BMI data annually for surveillance and evaluation purposes. Using the instructions and templates provided in this report, BCHD can continue to track trends over time and monitor obesity and overweight rates overall for the district and by school, grade, and race/ethnicity. UCLA explored the possibility of conducting additional research with LiveWell Kids BMI data however the program was not designed to collect data required for a scientific study. UCLA was unable to identify schools that could serve as a control group because the program was implemented at all RBUSD elementary schools and the schools began components of the LiveWell Kids program at the same time. Additionally, BMI data was not collected before the start of the program for pre- and post-program comparisons.

While the program does not allow for a scientific study using BCHD BMI data, future data collection will yield opportunities for additional analysis. Beginning in school year 2014/2015, BCHD collected five new data elements during BMI screening. Students were asked if they walked to school, participated in running club, ate fruit yesterday, ate vegetables yesterday, and had breakfast yesterday. Using this new data, BCHD could compare obesity and/or overweight rates for students who:

1. Participated in running club versus students who did not participate in running club
2. Walked to school versus students who did not walk to school
3. Ate fruit yesterday compared to students who did not eat fruit
4. Ate vegetables yesterday compared to students who did not eat vegetables
5. Ate breakfast yesterday compared to students who did not eat breakfast

BCHD should also consider additional assessment of the LiveWell Kids Program including parent and teacher satisfaction surveys, focus groups or key informant interviews with teacher and parent docents delivering nutrition lessons, and pre/post assessments that measure changes in the students' knowledge, attitudes, and behavior. Effort in these areas would be instrumental in measuring the success of the program and identifying effective strategies, lessons learned, and areas for improvement.

Appendix B: Data book

Appendix B: Table 1. Number of Students with a Valid BMI by School and Grade Level, Redondo Beach School District 2007-2014

	2007-2008		2008-2009		2009-2010		2010-2011		2011-2012	2012-2013	2013-2014
	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall
Alta Vista School	367	496	557	489	593	505	556	505	532	527	523
Kindergarten	2	88	100	87	98	86	94	92	87	96	71
Grade 1	51	86	90	73	103	87	84	79	84	99	89
Grade 2	78	73	103	91	93	78	94	81	77	87	106
Grade 3	82	85	84	66	99	89	83	78	95	72	85
Grade 4	67	73	97	93	97	80	105	90	88	86	81
Grade 5	87	91	83	79	103	85	96	85	101	87	91
Beryl Heights School			314	312	356	327	380	342	408	404	397
Kindergarten			51	53	64	56	76	62	83	64	48
Grade 1			57	57	62	56	72	64	69	82	70
Grade 2			52	49	60	57	55	55	74	71	80
Grade 3			48	46	56	53	64	55	61	65	71
Grade 4			59	60	53	49	59	56	61	67	74
Grade 5			47	47	61	56	54	50	60	55	54
Birney School	242	289	331	313	352	318	382	358	406	379	382
Kindergarten		42	69	65	68	63	81	73	84	62	53
Grade 1	61	64	51	46	60	57	66	65	86	75	68
Grade 2	59	56	60	59	47	42	58	55	63	76	76
Grade 3	47	47	60	54	67	58	49	46	62	54	76
Grade 4	37	39	49	47	63	58	67	61	52	61	52
Grade 5	38	41	42	42	47	40	61	58	59	51	57
Jefferson School			610	582	640	616	574	540	613	543	542
Kindergarten			87	80	108	100	92	88	95	92	83
Grade 1			93	91	104	96	114	108	97	101	87
Grade 2			91	87	94	89	93	89	107	90	97
Grade 3			83	84	87	88	85	81	92	95	95
Grade 4			81	75	88	88	91	80	83	88	91
Grade 5			95	88	76	72	85	84	90	77	89
Grade 6			80	77	83	83	14	10	49		
Lincoln School	436	527	505	512	546	494	503	474	513	526	469
Kindergarten	1	91	66	66	82	78	78	75	79	82	77
Grade 1	71	69	90	98	90	74	85	83	86	83	83
Grade 2	83	88	73	77	105	98	84	76	91	84	74
Grade 3	67	69	81	84	83	74	96	91	87	91	73
Grade 4	76	73	64	63	83	74	87	78	96	88	80
Grade 5	81	80	77	74	69	63	73	71	74	98	82
Grade 6	57	57	54	50	34	33					
Madison School	323	371	402	373	425	379	416	379	391	376	367
Kindergarten	2	55	77	69	75	65	64	58	71	60	59
Grade 1	63	66	62	58	86	73	73	65	71	82	64

	2007-2008		2008-2009		2009-2010		2010-2011		2011-2012	2012-2013	2013-2014
	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Fall	Fall
Grade 2	67	68	59	54	60	51	80	74	62	63	72
Grade 3	71	66	75	67	64	55	60	55	76	61	57
Grade 4	61	56	71	69	74	71	66	56	55	62	64
Grade 5	59	60	58	56	66	64	73	71	56	48	51
Tulita School			383	371	404	355	399	365	415	420	459
DK/TK							21	22	19	23	38
Kindergarten			77	74	86	76	60	54	71	72	69
Grade 1			56	55	63	56	69	60	71	70	86
Grade 2			57	57	69	58	65	55	62	73	73
Grade 3			57	54	64	62	67	64	57	59	76
Grade 4			60	62	59	51	67	65	71	56	62
Grade 5			42	37	63	52	50	45	64	67	55
Grade 6			34	32							
Washington School	433	563	572	522	559	511	530	496	548	597	576
DK/TK							21	17	22	20	
Kindergarten		82	114	104	115	112	79	77	83	116	117
Grade 1	75	97	73	66	93	76	89	83	85	95	108
Grade 2	86	94	96	90	78	74	85	81	92	90	87
Grade 3	90	95	91	83	92	88	77	74	88	90	84
Grade 4	93	100	98	86	89	74	94	85	83	100	90
Grade 5	89	95	100	93	92	87	85	79	95	86	90
DISTRICT TOTAL	1,801	2,246	3,674	3,474	3,875	3,505	3,740	3,459	3,826	3,772	3,715

Note: Missing and biologically impossible observations are excluded.

Appendix B: Table 2. Number and Proportion of Obese Elementary School Students by School and Grade Level, Redondo Beach School District 2007-2014

	2007-2008				2008-2009				2009-2010				2010-2011				2011-2012		2012-2013		2013-2014	
	Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall		Fall		Fall	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Alta Vista School	52	14%	64	13%	63	11%	62	13%	79	13%	56	11%	64	12%	52	10%	57	11%	47	9%	59	11%
Kindergarten	0	0%	16	18%	12	12%	15	17%	8	8%	6	7%	7	7%	8	9%	11	13%	10	10%	4	6%
Grade 1	6	12%	11	13%	10	11%	9	12%	12	12%	7	8%	6	7%	3	4%	7	8%	9	9%	18	20%
Grade 2	10	13%	7	10%	16	16%	11	12%	15	16%	9	12%	14	15%	10	12%	2	3%	8	9%	15	14%
Grade 3	12	15%	8	9%	6	7%	6	9%	17	17%	15	17%	9	11%	8	10%	11	12%	4	6%	8	9%
Grade 4	6	9%	7	10%	12	12%	14	15%	9	9%	8	10%	19	18%	15	17%	7	8%	10	12%	4	5%
Grade 5	18	21%	15	16%	7	8%	7	9%	18	17%	11	13%	9	9%	8	9%	19	19%	6	7%	10	11%
Beryl Heights School					39	12%	38	12%	52	15%	35	11%	39	10%	33	10%	39	10%	39	10%	40	10%
Kindergarten					5	10%	4	8%	11	17%	7	13%	5	7%	7	11%	12	14%	4	6%	4	8%
Grade 1					7	12%	7	12%	7	11%	4	7%	9	13%	7	11%	7	10%	16	20%	5	7%
Grade 2					6	12%	3	6%	7	12%	5	9%	3	5%	3	5%	6	8%	7	10%	13	16%
Grade 3					6	13%	7	15%	6	11%	4	8%	6	9%	6	11%	4	7%	6	9%	10	14%
Grade 4					9	15%	10	17%	9	17%	8	16%	6	10%	4	7%	4	7%	3	4%	4	5%
Grade 5					6	13%	7	15%	12	20%	7	13%	10	19%	6	12%	6	10%	3	5%	4	7%
Birney School	48	20%	47	16%	60	18%	57	18%	63	18%	51	16%	57	15%	43	12%	54	13%	39	10%	38	10%
Kindergarten			6	14%	14	20%	13	20%	7	10%	6	10%	5	6%	4	5%	16	19%	4	6%	5	9%
Grade 1	11	18%	8	13%	6	12%	6	13%	10	17%	9	16%	8	12%	4	6%	4	5%	10	13%	7	10%
Grade 2	10	17%	7	13%	9	15%	10	17%	6	13%	5	12%	13	22%	7	13%	7	11%	5	7%	5	7%
Grade 3	10	21%	10	21%	10	17%	7	13%	14	21%	10	17%	6	12%	5	11%	11	18%	7	13%	5	7%
Grade 4	9	24%	6	15%	11	22%	11	23%	15	24%	13	22%	15	22%	13	21%	8	15%	10	16%	7	13%
Grade 5	8	21%	10	24%	10	24%	10	24%	11	23%	8	20%	10	16%	10	17%	8	14%	3	6%	9	16%
Jefferson School					59	10%	51	9%	61	10%	45	7%	47	8%	37	7%	49	8%	34	6%	33	6%
Kindergarten					10	11%	8	10%	7	6%	5	5%	2	2%	3	3%	4	4%	5	5%	8	10%
Grade 1					9	10%	7	8%	14	13%	9	9%	5	4%	2	2%	6	6%	4	4%	6	7%
Grade 2					7	8%	7	8%	8	9%	7	8%	12	13%	10	11%	3	3%	5	6%	4	4%
Grade 3					9	11%	9	11%	9	10%	6	7%	10	12%	8	10%	13	14%	2	2%	3	3%
Grade 4					8	10%	5	7%	11	13%	9	10%	9	10%	5	6%	10	12%	12	14%	4	4%
Grade 5					7	7%	6	7%	7	9%	5	7%	9	11%	9	11%	9	10%	6	8%	8	9%
Grade 6					9	11%	9	12%	5	6%	4	5%	0	0%	0	0%	4	8%				
Lincoln School	96	22%	94	18%	97	19%	95	19%	106	19%	81	16%	77	15%	60	13%	73	14%	62	12%	46	10%
Kindergarten	0	0%	12	13%	11	17%	9	14%	13	16%	12	15%	6	8%	4	5%	11	14%	3	4%	7	9%

	2007-2008				2008-2009				2009-2010				2010-2011				2011-2012		2012-2013		2013-2014	
	Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall		Fall		Fall	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Grade 1	10	14%	9	13%	13	14%	14	14%	14	16%	11	15%	13	15%	7	8%	6	7%	12	14%	7	8%
Grade 2	13	16%	13	15%	17	23%	17	22%	18	17%	12	12%	14	17%	10	13%	13	14%	8	10%	9	12%
Grade 3	16	24%	14	20%	14	17%	16	19%	18	22%	14	19%	13	14%	13	14%	11	13%	16	18%	5	7%
Grade 4	21	28%	16	22%	12	19%	12	19%	16	19%	12	16%	19	22%	16	21%	14	15%	10	11%	11	14%
Grade 5	16	20%	15	19%	18	23%	16	22%	15	22%	11	17%	12	16%	10	14%	18	24%	13	13%	7	9%
Grade 6	20	35%	15	26%	12	22%	11	22%	12	35%	9	27%										
Madison School	69	21%	68	18%	66	16%	53	14%	77	18%	61	16%	59	14%	50	13%	52	13%	56	15%	47	13%
Kindergarten	1	50%	7	13%	11	14%	11	16%	13	17%	12	18%	6	9%	7	12%	9	13%	8	13%	5	8%
Grade 1	13	21%	11	17%	9	15%	7	12%	16	19%	10	14%	10	14%	8	12%	7	10%	12	15%	8	13%
Grade 2	10	15%	7	10%	8	14%	8	15%	10	17%	7	14%	11	14%	10	14%	7	11%	10	16%	9	13%
Grade 3	16	23%	16	24%	11	15%	11	16%	12	19%	11	20%	11	18%	9	16%	12	16%	12	20%	11	19%
Grade 4	12	20%	10	18%	16	23%	11	16%	13	18%	9	13%	13	20%	10	18%	6	11%	10	16%	7	11%
Grade 5	17	29%	17	28%	11	19%	5	9%	13	20%	12	19%	8	11%	6	8%	11	20%	4	8%	7	14%
Tulita School					42	11%	37	10%	41	10%	29	8%	33	8%	24	7%	28	7%	27	6%	31	7%
DK/TK													1	5%	1	5%	1	5%	1	4%	5	13%
Kindergarten					5	6%	6	8%	6	7%	2	3%	3	5%	2	4%	4	6%	3	4%	5	7%
Grade 1					2	4%	3	5%	6	10%	5	9%	2	3%	2	3%	5	7%	8	11%	5	6%
Grade 2					5	9%	3	5%	4	6%	3	5%	7	11%	5	9%	2	3%	4	5%	5	7%
Grade 3					9	16%	7	13%	6	9%	5	8%	7	10%	4	6%	6	11%	1	2%	5	7%
Grade 4					7	12%	5	8%	12	20%	8	16%	5	7%	5	8%	6	8%	6	11%	3	5%
Grade 5					8	19%	7	19%	7	11%	6	12%	8	16%	5	11%	4	6%	4	6%	3	5%
Grade 6					6	18%	6	19%														
Washington School	101	23%	120	21%	105	18%	89	17%	105	19%	93	18%	92	18%	78	16%	85	16%	79	13%	67	12%
DK/TK													2	10%	1	6%	2	8%	1	5%	0	0%
Kindergarten			14	17%	16	14%	14	13%	17	15%	15	13%	8	10%	9	12%	8	10%	14	12%	11	9%
Grade 1	14	19%	17	18%	9	12%	7	11%	15	16%	16	21%	15	17%	15	18%	11	13%	7	7%	7	11%
Grade 2	22	26%	24	26%	15	16%	12	13%	13	17%	8	11%	14	16%	14	17%	19	21%	10	11%	8	9%
Grade 3	22	24%	21	22%	18	20%	18	22%	18	20%	19	22%	15	19%	11	15%	17	19%	17	19%	11	13%
Grade 4	26	28%	26	26%	23	23%	19	22%	21	24%	13	18%	17	18%	15	18%	11	13%	18	18%	16	18%
Grade 5	17	19%	18	19%	24	24%	19	20%	21	23%	22	25%	21	25%	13	16%	17	18%	12	14%	14	16%
DISTRICT TOTAL	366	20%	393	18%	531	14%	482	14%	584	15%	451	13%	468	13%	377	11%	437	11%	383	10%	353	10%

Note: Missing and biologically impossible observations are excluded. Percentiles are based on child's sex and BMI for age.

Appendix B: Table 3. Number and Proportion of Overweight Elementary School Students by School and Grade Level, Redondo Beach School District 2007-2014

	2007-2008				2008-2009				2009-2010				2010-2011				2011-2012		2012-2013		2013-2014	
	Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall		Fall		Fall	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Alta Vista School	62	17%	91	18%	92	17%	85	17%	98	17%	78	15%	80	14%	68	13%	85	16%	77	15%	84	16%
Kindergarten	1	50%	14	16%	19	19%	13	15%	13	13%	14	16%	11	12%	7	8%	15	17%	13	14%	11	15%
Grade 1	8	16%	13	15%	8	9%	6	8%	18	17%	18	21%	13	15%	9	11%	9	11%	15	15%	9	10%
Grade 2	12	15%	13	18%	17	17%	18	20%	12	13%	6	8%	17	18%	18	22%	14	18%	12	14%	13	12%
Grade 3	14	17%	15	18%	14	17%	16	24%	16	16%	12	13%	7	8%	8	10%	18	19%	9	13%	14	16%
Grade 4	9	13%	10	14%	17	18%	19	20%	20	21%	12	15%	14	13%	13	14%	12	14%	16	19%	15	19%
Grade 5	18	21%	26	29%	17	20%	13	16%	19	18%	16	19%	18	19%	13	15%	17	17%	12	14%	22	24%
Beryl Heights School					57	18%	63	20%	70	20%	72	22%	73	19%	55	16%	71	17%	54	13%	60	15%
Kindergarten					6	12%	10	19%	11	17%	10	18%	18	24%	9	15%	17	20%	10	16%	3	6%
Grade 1					9	16%	9	16%	10	16%	11	20%	12	17%	11	17%	9	13%	7	9%	10	14%
Grade 2					9	17%	15	31%	13	22%	12	21%	10	18%	13	24%	9	12%	7	10%	12	15%
Grade 3					15	31%	10	22%	14	25%	14	26%	12	19%	5	9%	13	21%	10	15%	11	15%
Grade 4					9	15%	10	17%	12	23%	13	27%	9	15%	7	13%	13	21%	10	15%	16	22%
Grade 5					9	19%	9	19%	10	16%	12	21%	12	22%	10	20%	10	17%	10	18%	8	15%
Birney School	55	23%	57	20%	64	19%	55	18%	62	18%	50	16%	57	15%	58	16%	62	15%	61	16%	56	15%
Kindergarten			7	17%	14	20%	12	18%	7	10%	7	11%	13	16%	8	11%	9	11%	12	19%	10	19%
Grade 1	9	15%	12	19%	7	14%	7	15%	10	17%	9	16%	4	6%	8	12%	11	13%	9	12%	8	12%
Grade 2	14	24%	11	20%	13	22%	10	17%	6	13%	6	14%	7	12%	13	24%	6	10%	8	11%	11	14%
Grade 3	14	30%	8	17%	13	22%	14	26%	14	21%	10	17%	8	16%	6	13%	16	26%	4	7%	8	11%
Grade 4	7	19%	13	33%	7	14%	6	13%	15	24%	11	19%	11	16%	10	16%	7	13%	18	30%	7	13%
Grade 5	11	29%	6	15%	10	24%	6	14%	10	21%	7	18%	14	23%	13	22%	13	22%	10	20%	12	21%
Jefferson School					102	17%	84	14%	95	15%	95	15%	93	16%	80	15%	90	15%	63	12%	64	12%
Kindergarten					18	21%	12	15%	12	11%	14	14%	16	17%	15	17%	19	20%	9	10%	10	12%
Grade 1					15	16%	12	13%	15	14%	17	18%	12	11%	12	11%	15	15%	14	14%	7	8%
Grade 2					14	15%	13	15%	15	16%	9	10%	21	23%	19	21%	9	8%	7	8%	8	8%
Grade 3					12	14%	14	17%	13	15%	14	16%	13	15%	10	12%	17	18%	12	13%	14	15%
Grade 4					13	16%	11	15%	16	18%	13	15%	12	13%	11	14%	10	12%	15	17%	11	12%
Grade 5					19	20%	15	17%	14	18%	14	19%	16	19%	12	14%	10	11%	6	8%	14	16%
Grade 6					11	14%	7	9%	10	12%	14	17%	3	21%	1	10%	10	20%				
Lincoln School	84	19%	96	18%	89	18%	88	17%	93	17%	89	18%	71	14%	58	12%	70	14%	81	15%	72	15%

	2007-2008				2008-2009				2009-2010				2010-2011				2011-2012		2012-2013		2013-2014	
	Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall		Fall		Fall	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Kindergarten	0	0%	13	14%	7	11%	8	12%	16	20%	16	21%	14	18%	13	17%	12	15%	13	16%	13	17%
Grade 1	9	13%	10	14%	13	14%	13	13%	10	11%	7	9%	12	14%	16	19%	17	20%	13	16%	9	11%
Grade 2	17	20%	13	15%	11	15%	15	19%	13	12%	17	17%	5	6%	2	3%	10	11%	15	18%	10	14%
Grade 3	19	28%	19	28%	12	15%	9	11%	17	20%	17	23%	11	11%	6	7%	11	13%	17	19%	12	16%
Grade 4	12	16%	13	18%	18	28%	18	29%	14	17%	10	14%	19	22%	13	17%	9	9%	12	14%	13	16%
Grade 5	16	20%	15	19%	14	18%	13	18%	17	25%	15	24%	10	14%	8	11%	11	15%	11	11%	15	18%
Grade 6	11	19%	13	23%	14	26%	12	24%	6	18%	7	21%										
Madison School	58	18%	68	18%	86	21%	70	19%	81	19%	74	20%	76	18%	55	15%	62	16%	58	15%	52	14%
Kindergarten	0	0%	8	15%	21	27%	13	19%	10	13%	5	8%	15	23%	9	16%	10	14%	11	18%	8	14%
Grade 1	13	21%	17	26%	8	13%	7	12%	24	28%	19	26%	6	8%	7	11%	13	18%	11	13%	11	17%
Grade 2	6	9%	8	12%	12	20%	10	19%	6	10%	10	20%	15	19%	16	22%	8	13%	14	22%	8	11%
Grade 3	14	20%	8	12%	7	9%	8	12%	16	25%	12	22%	12	20%	5	9%	15	20%	6	10%	7	12%
Grade 4	15	25%	15	27%	21	30%	18	26%	13	18%	13	18%	16	24%	9	16%	8	15%	9	15%	10	16%
Grade 5	10	17%	12	20%	17	29%	14	25%	12	18%	15	23%	12	16%	9	13%	8	14%	7	15%	8	16%
Tulita School					58	15%	55	15%	57	14%	51	14%	63	16%	57	16%	61	15%	63	15%	49	11%
DK/TK													5	24%	3	14%	2	11%	4	17%	5	13%
Kindergarten					13	17%	12	16%	15	17%	12	16%	11	18%	11	20%	9	13%	6	8%	5	7%
Grade 1					12	21%	12	22%	8	13%	6	11%	10	14%	8	13%	12	17%	9	13%	7	8%
Grade 2					7	12%	7	12%	14	20%	14	24%	11	17%	9	16%	7	11%	14	19%	10	14%
Grade 3					8	14%	7	13%	7	11%	7	11%	13	19%	10	16%	9	16%	9	15%	9	12%
Grade 4					6	10%	7	11%	7	12%	6	12%	8	12%	10	15%	13	18%	7	13%	7	11%
Grade 5					8	19%	8	22%	6	10%	6	12%	5	10%	6	13%	9	14%	14	21%	6	11%
Grade 6					4	12%	2	6%														
Washington School	91	21%	106	19%	119	21%	95	18%	109	20%	93	18%	100	19%	94	19%	101	18%	109	18%	88	15%
DK/TK													3	14%	2	12%	2	9%	5	25%	0	0%
Kindergarten			13	16%	17	15%	13	13%	16	14%	16	14%	16	20%	13	17%	17	20%	17	15%	19	16%
Grade 1	15	20%	15	15%	19	26%	15	23%	18	19%	9	12%	17	19%	14	17%	13	15%	19	20%	10	9%
Grade 2	15	17%	16	17%	21	22%	15	17%	17	22%	16	22%	16	19%	16	20%	13	14%	14	16%	14	16%
Grade 3	20	22%	18	19%	17	19%	14	17%	16	17%	15	17%	16	21%	20	27%	14	16%	20	22%	12	14%
Grade 4	14	15%	19	19%	19	19%	15	17%	20	22%	17	23%	19	20%	13	15%	21	25%	17	17%	16	18%
Grade 5	27	30%	25	26%	26	26%	23	25%	22	24%	20	23%	13	15%	16	20%	21	22%	17	20%	17	19%
DISTRICT TOTAL	350	19%	418	19%	667	18%	595	17%	665	17%	602	17%	613	16%	525	15%	602	16%	566	15%	525	14%

Note: Missing and biologically impossible observations are excluded. Percentiles are based on child's sex and BMI for age.

Appendix B: Table 4. Number and Proportion of Healthy Weight Elementary School Students by School and Grade Level, Redondo Beach School District 2007-2014

	2007-2008				2008-2009				2009-2010				2010-2011				2011-2012		2012-2013		2013-2014	
	Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall		Fall		Fall	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Alta Vista School	248	68%	333	67%	394	71%	334	68%	408	69%	362	72%	399	72%	372	74%	379	71%	394	75%	370	71%
Kindergarten	1	50%	56	64%	68	68%	58	67%	76	78%	63	73%	74	79%	74	80%	60	69%	73	76%	53	75%
Grade 1	36	71%	61	71%	70	77%	55	75%	73	71%	62	71%	62	74%	64	81%	67	80%	72	73%	60	67%
Grade 2	55	71%	50	68%	68	66%	60	66%	63	68%	62	79%	63	67%	53	65%	60	78%	66	76%	74	70%
Grade 3	55	67%	61	72%	63	75%	43	65%	64	65%	61	69%	63	76%	59	76%	66	69%	58	81%	63	74%
Grade 4	51	76%	56	77%	67	69%	59	63%	68	70%	59	74%	70	67%	60	67%	63	72%	60	70%	62	77%
Grade 5	50	57%	49	54%	58	70%	59	75%	64	62%	55	65%	67	70%	62	73%	63	62%	65	75%	58	64%
Beryl Heights					202	64%	208	67%	230	65%	218	67%	260	68%	247	72%	285	70%	305	76%	292	74%
Kindergarten					27	53%	39	74%	42	66%	39	70%	52	68%	45	73%	52	63%	49	77%	41	85%
Grade 1					39	68%	40	70%	43	69%	41	73%	49	68%	45	70%	51	74%	57	70%	54	77%
Grade 2					36	69%	29	59%	39	65%	39	68%	42	76%	39	71%	58	78%	57	80%	53	66%
Grade 3					27	56%	29	63%	35	63%	34	64%	42	66%	42	76%	44	72%	48	74%	50	70%
Grade 4					41	69%	40	67%	32	60%	28	57%	43	73%	43	77%	40	66%	54	81%	53	72%
Grade 5					32	68%	31	66%	39	64%	37	66%	32	59%	33	66%	40	67%	40	73%	41	76%
Birney School	135	56%	182	63%	202	61%	199	64%	221	63%	213	67%	261	68%	246	69%	277	68%	272	72%	275	72%
Kindergarten			29	69%	41	59%	40	62%	53	78%	50	79%	62	77%	57	78%	56	67%	45	73%	37	70%
Grade 1	41	67%	44	69%	37	73%	33	72%	40	67%	38	67%	52	79%	51	78%	68	79%	55	73%	51	75%
Grade 2	35	59%	38	68%	37	62%	38	64%	34	72%	30	71%	38	66%	34	62%	49	78%	61	80%	58	76%
Grade 3	21	45%	28	60%	36	60%	33	61%	37	55%	37	64%	34	69%	34	74%	33	53%	41	76%	59	78%
Grade 4	20	54%	19	49%	30	61%	29	62%	31	49%	33	57%	39	58%	37	61%	36	69%	33	54%	36	69%
Grade 5	18	47%	24	59%	21	50%	26	62%	26	55%	25	63%	36	59%	33	57%	35	59%	37	73%	34	60%
Jefferson School					440	72%	436	75%	476	74%	468	76%	426	74%	411	76%	459	75%	429	79%	431	80%
Kindergarten					58	67%	60	75%	87	81%	79	79%	74	80%	69	78%	71	75%	76	83%	64	77%
Grade 1					67	72%	70	77%	73	70%	69	72%	94	82%	91	84%	73	75%	82	81%	72	83%
Grade 2					70	77%	66	76%	70	74%	71	80%	59	63%	59	66%	92	86%	74	82%	85	88%
Grade 3					60	72%	59	70%	65	75%	68	77%	60	71%	61	75%	60	65%	76	80%	76	80%
Grade 4					60	74%	58	77%	60	68%	66	75%	70	77%	63	79%	60	72%	60	68%	71	78%
Grade 5					66	69%	64	73%	55	72%	52	72%	59	69%	59	70%	70	78%	61	79%	63	71%
Grade 6					59	74%	59	77%	66	80%	63	76%	10	71%	9	90%	33	67%				
Lincoln School	244	56%	325	62%	311	62%	326	64%	342	63%	319	65%	347	69%	344	73%	361	70%	372	71%	342	73%

	2007-2008				2008-2009				2009-2010				2010-2011				2011-2012		2012-2013		2013-2014	
	Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall		Fall		Fall	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Kindergarten	1	100	62	68%	48	73%	48	73%	52	63%	49	63%	57	73%	56	75%	56	71%	65	79%	56	73%
Grade 1	49	69%	49	71%	62	69%	70	71%	66	73%	56	76%	59	69%	59	71%	63	73%	57	69%	64	77%
Grade 2	53	64%	61	69%	44	60%	45	58%	71	68%	67	68%	64	76%	63	83%	66	73%	61	73%	55	74%
Grade 3	32	48%	36	52%	53	65%	59	70%	47	57%	42	57%	68	71%	67	74%	64	74%	56	62%	56	77%
Grade 4	39	51%	42	58%	34	53%	33	52%	53	64%	51	69%	48	55%	47	60%	70	73%	63	72%	53	66%
Grade 5	45	56%	47	59%	43	56%	44	59%	37	54%	37	59%	51	70%	52	73%	42	57%	70	71%	58	71%
Grade 6	25	44%	28	49%	27	50%	27	54%	16	47%	17	52%										
Madison School	191	59%	228	61%	243	60%	246	66%	262	62%	237	63%	273	66%	262	69%	264	68%	247	66%	252	69%
Kindergarten	1	50%	40	73%	44	57%	42	61%	50	67%	46	71%	43	67%	42	72%	49	69%	36	60%	44	75%
Grade 1	37	59%	38	58%	44	71%	44	76%	44	51%	41	56%	54	74%	46	71%	50	70%	56	68%	41	64%
Grade 2	48	72%	47	69%	38	64%	36	67%	44	73%	34	67%	51	64%	44	59%	43	69%	37	59%	53	74%
Grade 3	40	56%	41	62%	54	72%	48	72%	36	56%	32	58%	37	62%	41	75%	44	58%	40	66%	36	63%
Grade 4	33	54%	31	55%	33	46%	40	58%	47	64%	47	66%	37	56%	35	63%	41	75%	42	68%	44	69%
Grade 5	32	54%	31	52%	30	52%	36	64%	41	62%	37	58%	51	70%	54	76%	37	66%	36	75%	34	67%
Tulita School					273	71%	275	74%	302	75%	272	77%	294	74%	277	76%	318	77%	324	77%	362	79%
DK/TK													13	62%	16	73%	13	68%	18	78%	27	71%
Kindergarten					55	71%	56	76%	64	74%	62	82%	44	73%	40	74%	55	77%	61	85%	57	83%
Grade 1					41	73%	39	71%	48	76%	45	80%	57	83%	50	83%	54	76%	52	74%	68	79%
Grade 2					44	77%	47	82%	50	72%	41	71%	46	71%	40	73%	53	85%	54	74%	56	77%
Grade 3					40	70%	40	74%	50	78%	50	81%	46	69%	49	77%	42	74%	49	83%	60	79%
Grade 4					45	75%	49	79%	40	68%	36	71%	52	78%	48	74%	51	72%	43	77%	49	79%
Grade 5					26	62%	22	59%	50	79%	38	73%	36	72%	34	76%	50	78%	47	70%	45	82%
Grade 6					22	65%	22	69%														
Washington	235	54%	328	58%	341	60%	331	63%	333	60%	316	62%	330	62%	314	63%	350	64%	391	65%	405	70%
DK/TK													15	71%	14	82%	17	77%	13	65%		
Kindergarten			53	65%	80	70%	76	73%	80	70%	79	71%	53	67%	55	71%	58	70%	81	70%	84	72%
Grade 1	45	59%	63	64%	44	60%	43	65%	57	61%	49	64%	57	64%	52	63%	57	67%	65	68%	87	81%
Grade 2	48	56%	54	57%	58	60%	61	68%	47	60%	50	68%	54	64%	50	62%	58	63%	64	71%	62	71%
Grade 3	46	51%	55	58%	56	62%	51	61%	54	59%	52	59%	46	60%	41	55%	57	65%	50	56%	60	71%
Grade 4	52	56%	53	53%	55	56%	50	58%	48	54%	43	58%	56	60%	53	62%	49	59%	62	62%	56	62%
Grade 5	44	49%	50	53%	48	48%	50	54%	47	51%	43	49%	49	58%	49	62%	54	57%	56	65%	56	62%
DISTRICT TOTAL	1,053	58%	1,396	62%	2,406	65%	2,355	68%	2,574	66%	2,405	69%	2,590	69%	2,473	71%	2,693	70%	2,734	72%	2,729	73%

Note: Missing and biologically impossible observations are excluded. Percentiles are based on child's sex and BMI for age.

Appendix B: Table 5. Number and Proportion of Underweight Elementary School Students by School and Grade Level, Redondo Beach School District 2007-2014

	2007-2008				2008-2009				2009-2010				2010-2011				2011-2012		2012-2013		2013-2014	
	Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall		Fall		Fall	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Alta Vista School	5	1%	8	2%	8	1%	8	2%	8	1%	9	2%	13	2%	13	3%	11	2%	9	2%	10	2%
Kindergarten	0	0%	2	2%	1	1%	1	1%	1	1%	3	3%	2	2%	3	3%	1	1%	0	0%	3	4%
Grade 1	1	2%	1	1%	2	2%	3	4%	0	0%	0	0%	3	4%	3	4%	1	1%	3	3%	2	2%
Grade 2	1	1%	3	4%	2	2%	2	2%	3	3%	1	1%	0	0%	0	0%	1	1%	1	1%	4	4%
Grade 3	1	1%	1	1%	1	1%	1	2%	2	2%	1	1%	4	5%	3	4%	0	0%	1	1%	0	0%
Grade 4	1	1%	0	0%	1	1%	1	1%	0	0%	1	1%	2	2%	2	2%	6	7%	0	0%	0	0%
Grade 5	1	1%	1	1%	1	1%	0	0%	2	2%	3	4%	2	2%	2	2%	2	2%	4	5%	1	1%
Beryl Heights School					16	5%	3	1%	4	1%	2	1%	8	2%	7	2%	13	3%	6	1%	5	1%
Kindergarten					13	25%	0	0%	0	0%	0	0%	1	1%	1	2%	2	2%	1	2%	0	0%
Grade 1					2	4%	1	2%	2	3%	0	0%	2	3%	1	2%	2	3%	2	2%	1	1%
Grade 2					1	2%	2	4%	1	2%	1	2%	0	0%	0	0%	1	1%	0	0%	2	3%
Grade 3					0	0%	0	0%	1	2%	1	2%	4	6%	2	4%	0	0%	1	2%	0	0%
Grade 4					0	0%	0	0%	0	0%	0	0%	1	2%	2	4%	4	7%	0	0%	1	1%
Grade 5					0	0%	0	0%	0	0%	0	0%	0	0%	1	2%	4	7%	2	4%	1	2%
Birney School	4	2%	3	1%	5	2%	2	1%	6	2%	4	1%	7	2%	11	3%	13	3%	7	2%	13	3%
Kindergarten			0	0%	0	0%	0	0%	1	1%	0	0%	1	1%	4	5%	3	4%	1	2%	1	2%
Grade 1	0	0%	0	0%	1	2%	0	0%	0	0%	1	2%	2	3%	2	3%	3	3%	1	1%	2	3%
Grade 2	0	0%	0	0%	1	2%	1	2%	1	2%	1	2%	0	0%	1	2%	1	2%	2	4%	2	3%
Grade 3	2	4%	1	2%	1	2%	0	0%	2	3%	1	2%	1	2%	1	2%	2	3%	2	4%	4	5%
Grade 4	1	3%	1	3%	1	2%	1	2%	2	3%	1	2%	2	3%	1	2%	1	2%	0	0%	2	4%
Grade 5	1	3%	1	2%	1	2%	0	0%	0	0%	0	0%	1	2%	2	3%	3	5%	1	2%	2	4%
Jefferson School					9	1%	11	2%	8	1%	8	1%	8	1%	12	2%	15	2%	17	3%	14	3%
Kindergarten					1	1%	0	0%	2	2%	2	2%	0	0%	1	1%	1	1%	2	2%	1	1%
Grade 1					2	2%	2	2%	2	2%	1	1%	3	3%	3	3%	3	3%	1	1%	2	2%
Grade 2					0	0%	1	1%	1	1%	2	2%	1	1%	1	1%	3	3%	4	4%	0	0%
Grade 3					2	2%	2	2%	0	0%	0	0%	2	2%	2	2%	2	2%	5	5%	2	2%
Grade 4					0	0%	1	1%	1	1%	0	0%	0	0%	1	1%	3	4%	1	1%	5	5%
Grade 5					3	3%	3	3%	0	0%	1	1%	1	1%	4	5%	1	1%	4	5%	4	4%
Grade 6					1	1%	2	3%	2	2%	2	2%	1	7%	0	0%	2	4%				
Lincoln School	12	3%	12	2%	8	2%	3	1%	5	1%	5	1%	8	2%	12	3%	9	2%	11	2%	9	2%
Kindergarten	0	0%	4	4%	0	0%	1	2%	1	1%	1	1%	1	1%	2	3%	0	0%	1	1%	1	1%

	2007-2008				2008-2009				2009-2010				2010-2011				2011-2012		2012-2013		2013-2014	
	Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall		Fall		Fall	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Grade 1	3	4%	1	1%	2	2%	1	1%	0	0%	0	0%	1	1%	1	1%	0	0%	1	1%	3	4%
Grade 2	0	0%	1	1%	1	1%	0	0%	3	3%	2	2%	1	1%	1	1%	2	2%	0	0%	0	0%
Grade 3	0	0%	0	0%	2	2%	0	0%	1	1%	1	1%	4	4%	5	5%	1	1%	2	2%	0	0%
Grade 4	4	5%	2	3%	0	0%	0	0%	0	0%	1	1%	1	1%	2	3%	3	3%	3	3%	3	4%
Grade 5	4	5%	3	4%	2	3%	1	1%	0	0%	0	0%	0	0%	1	1%	3	4%	4	4%	2	2%
Grade 6	1	2%	1	2%	1	2%	0	0%	0	0%	0	0%										
Madison School	5	2%	7	2%	7	2%	4	1%	5	1%	7	2%	8	2%	12	3%	13	3%	15	4%	16	4%
Kindergarten	0	0%	0	0%	1	1%	3	4%	2	3%	2	3%	0	0%	0	0%	3	4%	5	8%	2	3%
Grade 1	0	0%	0	0%	1	2%	0	0%	2	2%	3	4%	3	4%	4	6%	1	1%	3	4%	4	6%
Grade 2	3	4%	6	9%	1	2%	0	0%	0	0%	0	0%	3	4%	4	5%	4	6%	2	3%	2	3%
Grade 3	1	1%	1	2%	3	4%	0	0%	0	0%	0	0%	0	0%	0	0%	5	7%	3	5%	3	5%
Grade 4	1	2%	0	0%	1	1%	0	0%	1	1%	2	3%	0	0%	2	4%	0	0%	1	2%	3	5%
Grade 5	0	0%	0	0%	0	0%	1	2%	0	0%	0	0%	2	3%	2	3%	0	0%	1	2%	2	4%
Tulita School					10	3%	4	1%	4	1%	3	1%	9	2%	7	2%	8	2%	6	1%	17	4%
DK/TK													2	10%	2	9%	3	16%	0	0%	1	3%
Kindergarten					4	5%	0	0%	1	1%	0	0%	2	3%	1	2%	3	4%	2	3%	2	3%
Grade 1					1	2%	1	2%	1	2%	0	0%	0	0%	0	0%	0	0%	1	1%	6	7%
Grade 2					1	2%	0	0%	1	1%	0	0%	1	2%	1	2%	0	0%	1	1%	2	3%
Grade 3					0	0%	0	0%	1	2%	0	0%	1	1%	1	2%	0	0%	0	0%	2	3%
Grade 4					2	3%	1	2%	0	0%	1	2%	2	3%	2	3%	1	1%	0	0%	3	5%
Grade 5					0	0%	0	0%	0	0%	2	4%	1	2%	0	0%	1	2%	2	3%	1	2%
Grade 6					2	6%	2	6%	0	0%	0	0%										
Washington School	6	1%	9	2%	7	1%	7	1%	12	2%	9	2%	8	2%	10	2%	12	2%	18	3%	16	3%
DK/TK													1	5%	0	0%	1	5%	1	5%	0	0%
Kindergarten			2	2%	1	1%	1	1%	2	2%	2	2%	2	3%	0	0%	0	0%	4	3%	3	3%
Grade 1	1	1%	2	2%	1	1%	1	2%	3	3%	2	3%	0	0%	2	2%	4	5%	4	4%	4	4%
Grade 2	1	1%	0	0%	2	2%	2	2%	1	1%	0	0%	1	1%	1	1%	2	2%	2	2%	3	3%
Grade 3	2	2%	1	1%	0	0%	0	0%	4	4%	2	2%	0	0%	2	3%	0	0%	3	3%	1	1%
Grade 4	1	1%	2	2%	1	1%	2	2%	0	0%	1	1%	2	2%	4	5%	2	2%	3	3%	2	2%
Grade 5	1	1%	2	2%	2	2%	1	1%	2	2%	2	2%	2	2%	1	1%	3	3%	1	1%	3	3%
DISTRICT TOTAL	32	2%	39	2%	70	2%	42	1%	52	1%	47	1%	69	2%	84	2%	94	2%	89	2%	100	3%

Note: Missing and biologically impossible observations are excluded. Percentiles are based on child's sex and BMI for age.

Appendix B: Table 6. Number and Proportion of Underweight, Healthy Weight, Overweight, and Obese Elementary School Students by Race/Ethnicity, Redondo Beach School District 2007-2014

	2007-2008				2008-2009				2009-2010				2010-2011				2011-2012		2012-2013		2013-2014	
	Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall		Fall		Fall	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Underweight	32	2%	39	2%	61	2%	40	1%	48	1%	45	1%	66	2%	84	2%	92	2%	87	2%	98	3%
African American	1	1%	4	2%	4	2%	4	2%	4	2%	4	2%	8	5%	4	2%	5	3%	8	4%	7	4%
Asian American/ Pacific Islander	8	3%	6	2%	13	2%	9	2%	6	1%	6	1%	10	2%	18	3%	17	3%	10	2%	18	4%
Hispanic/Latino	5	1%	2	<1%	8	1%	5	1%	4	1%	4	1%	7	1%	12	2%	13	2%	9	2%	16	3%
White	18	2%	27	3%	36	2%	22	1%	30	1%	29	1%	41	2%	50	2%	56	2%	58	2%	56	2%
Other	0	0%	0	0%	0	0%	0	0%	4	3%	2	1%	0	0%	0	0%	1	1%	2	2%	1	1%
Healthy Weight	1,047	59%	1,389	62%	2,171	65%	2,187	68%	2,394	67%	2,326	69%	2,438	69%	2,433	71%	2,643	70%	2,687	73%	2,692	73%
African American	96	62%	107	61%	117	59%	120	63%	122	64%	117	65%	118	67%	126	74%	133	70%	123	68%	116	73%
Asian American/ Pacific Islander	186	63%	261	68%	379	71%	384	73%	346	68%	358	74%	417	74%	403	75%	412	74%	374	76%	300	73%
Hispanic/Latino	201	44%	280	50%	367	53%	381	56%	365	54%	341	53%	338	55%	322	55%	352	57%	324	57%	325	59%
White	539	64%	712	66%	1,264	69%	1,261	71%	1,460	70%	1,405	72%	1,519	72%	1,540	75%	1,701	73%	1,813	76%	1,890	77%
Other	25	66%	29	71%	44	71%	41	65%	101	70%	105	74%	46	59%	42	58%	45	61%	53	54%	61	60%
Overweight	342	19%	414	19%	614	18%	557	17%	616	17%	582	17%	577	16%	519	15%	595	16%	556	15%	514	14%
African American	26	17%	30	17%	44	22%	42	22%	32	17%	32	18%	31	18%	27	16%	32	17%	33	18%	18	11%
Asian American/ Pacific Islander	52	18%	64	17%	88	16%	88	17%	95	19%	75	15%	80	14%	71	13%	75	13%	61	12%	57	14%
Hispanic/Latino	109	24%	130	23%	162	23%	141	21%	140	21%	136	21%	125	20%	112	19%	132	21%	116	20%	109	20%
White	147	17%	183	17%	312	17%	276	16%	324	16%	318	16%	322	15%	291	14%	339	15%	319	13%	310	13%
Other	8	21%	7	17%	8	13%	10	16%	25	17%	21	15%	19	24%	18	25%	17	23%	27	27%	20	20%
Obese	364	20%	385	17%	479	14%	451	14%	541	15%	437	13%	455	13%	370	11%	428	11%	376	10%	359	10%
African American	33	21%	33	19%	32	16%	26	14%	34	18%	28	15%	20	11%	14	8%	19	10%	16	9%	18	11%
Asian American/ Pacific Islander	49	17%	54	14%	55	10%	47	9%	62	12%	47	10%	56	10%	42	8%	54	10%	44	9%	36	9%
Hispanic/Latino	137	30%	144	26%	160	23%	152	22%	171	25%	158	25%	147	24%	135	23%	125	20%	117	21%	99	18%
White	140	17%	149	14%	222	12%	214	12%	260	13%	191	10%	219	11%	167	8%	219	9%	182	8%	187	8%
Other	5	13%	5	12%	10	16%	12	19%	14	10%	13	9%	13	17%	12	17%	11	15%	17	17%	19	19%

Note: Missing and biologically impossible observations are excluded. Percentiles are based on child's sex and BMI for age.

Appendix C: LWK Data Dictionary

Position	Field	Description	Field Added by UCLA
1	StudentID	Student's School ID	
2	First	Student's first name	
3	Middle	Student's middle name	
4	Last	Student's last name	
5	SSN	Student's social security number	
6	GFirst	Guardian's first name	
7	GLast	Guardian's last name	
8	DOB	Student's date of birth	
9	Student_County	Student's county of residence	
10	Gender	Student's gender	
11	Race	Student's race	
12	Race_group	Race group. See Exhibit 2 for crosswalk between race and race_group.	X
13	Language	Student's language	
14	Language_group	Language group. See Exhibit 3 for crosswalk between language and language_group.	X
15	Grade	Student's grade level	
16	Mealstatus		
17	Address	Student address of residence	
18	City	Student city of residence	
19	State	Student state of residence	
20	Zip	Student zip code of residence	
21	Coop		
22	County2		
23	Dist_Lea	Numeric school district code	
24	Sch_Lea	Numeric school code. See Exhibit 4 for crosswalk between Sch_lea and Sch_name.	
25	Sch_Name	School name. See Exhibit 4 for crosswalk between Sch_lea and Sch_name.	X
26	Teacher	Student's teacher	
27	Height1	1 st height measurement; first assessment (fall). Multiple measurements may be required to ensure accuracy.	
28	Height2	2 nd height measurement; first assessment (fall)	
29	Height3	3 rd height measurement; first assessment (fall)	
30	Height4	4 th height measurement; first assessment (fall)	
31	Weight1	1 st weight measurement; first assessment (fall). Multiple measurements may be required to ensure accuracy.	

32	Weight2	2 nd weight measurement; first assessment (fall)	
33	Unable_to_assess	Unable to assess first assessment (fall)	
34	Station_no		
35	Measure_date	Date of first assessment (fall)	
36	Update_on		
37	Update_by		
38	BMI	Body Mass Index calculated by Costec software; first assessment (fall)	
39	Percentile	BMI percentile calculated by Costec software; first assessment (fall)	
40	Hurricane_Evac		
41	Height1_second	1 st height measurement; second assessment (spring). Multiple measurements may be required to ensure accuracy.	
42	Height2_second	2 nd height measurement; second assessment (spring)	
43	Height3_second	3 rd height measurement; second assessment (spring)	
44	Height4_second	4 th height measurement; second assessment (spring)	
45	Weight1_second	1 st weight measurement; second assessment (spring). Multiple measurements may be required to ensure accuracy.	
46	Weight2_second	2 nd weight measurement; second assessment (spring)	
47	Unable_to_Assess_second	Unable to assess second assessment (spring)	
48	Station_No_second		
49	Measure_Date_second		
50	BMI	Body Mass Index calculated by Costec software; second assessment (spring)	
51	Percentile	BMI percentile calculated by Costec software; second assessment (spring)	
52	Bmipct_cdc	BMI-for-age calculated from CDC algorithm; first assessment	X
53	bivbmi	BMI-for-age flag indicating biologically implausible value; first assessment	X
54	Bmipct_cdc_second	BMI-for-age calculated from CDC algorithm; second assessment	X
55	bivbmi_second	BMI-for-age calculated from CDC algorithm; second assessment	X
56	Bmicat	Category indicating underweight, healthy weight, overweight, or obese; first assessment.	X
57	Bmicat_second	Category indicating underweight, healthy weight, overweight, or obese; second assessment.	X
58	HouseholdID		
59	IntQ1		
60	IntQ2		
61	IntQ3		

Appendix D: References

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