



Recent Trends in Childhood Obesity Prevalence
in the Redondo Beach Unified School District:

A Case Study

June 2020



BACKGROUND

Despite more than two decades of widespread efforts to address the childhood obesity epidemic in Los Angeles County and across the nation, it remains a major public health threat. Nationally, nearly 1 in 5 children and adolescents under 20 years of age are obese, including 14% of 2 to 5-year-olds and 18% of children 6 to 11-year-olds.¹ In Los Angeles County, 24% of 5th, 7th and 9th graders in public schools are obese,² a percentage that has remained relatively unchanged over the past 15 years.³ An additional 19% are overweight and at heightened risk of developing obesity in the future.

Childhood obesity is of great concern because children who are obese are at increased risk for high blood pressure, diabetes, liver disease, muscle and joint problems, premature puberty and depression. Children who are obese may also face stigmatization and discrimination which, in turn, can lead to negative self-image and low self-esteem. In addition, children who are obese are more likely to be obese as adults, which is associated with a broad range of adverse health effects, including heart disease, stroke, diabetes, liver disease and some types of cancer.

TIMELINE OF KEY EVENTS

Childhood Obesity is 20.8% in Redondo Beach Unified School District (RBUSD) elementary schools



RBUSD and BCHD partner to launch LiveWell Kids nutrition and garden programs

Several RBUSD schools recognized by Alliance for Healthier Generation program



Walking School Bus program launches in Beach Cities

School Wellness Councils established at all school sites

2007

2010

2011

2012

2013

2014

8-Minute Morning Exercises program launches



Beach Cities are selected as Blue Zones Project® demonstration site

LiveWell Kids expands to preschools with the LiveWell Tots program



Past and current efforts to reduce the prevalence of obesity among children have focused to a large degree on education and encouragement for families to adopt healthy lifestyles. These efforts have been accompanied by strategies to create healthier environments that promote increased physical activity and improved nutrition. However, these efforts have been greatly challenged by a commercial food environment that is saturated with low-cost processed foods high in calories and low in nutrients, highly effective advertising that promotes the over-consumption of these foods, and neighborhood and home environments that work against being physically active.

Given these challenges, there have been very few examples of successful efforts to significantly reduce the prevalence of obesity in child populations across the United States. In Los Angeles County, slight declines in obesity prevalence were observed in the past decade among 5th graders in the Los Angeles Unified School District and among 2 to 4-year-olds participating in the Women, Infants, and Children (WIC) Nutrition Program.^{4,5} However, these declines have not been sustained.

Given this notable lack of success, Redondo Beach Unified School District provides an important case study that may provide insights on how to more effectively address the childhood obesity epidemic.



Classroom Activity Breaks started in RBUSD elementary schools



Beach Cities become a designated Blue Zones Community®



Bike Safety Education kicks off at elementary and middle schools

All RBUSD schools recognized by the Alliance for a Healthier Generation

Childhood obesity is 6.4% in RBUSD Elementary Schools



500 parent volunteers supporting school health programs

Beach Cities Volunteer Day engages the community in garden program



Data presented at national Childhood Obesity Conference

Worksite Wellness launches for RBUSD employees

THE REDONDO BEACH EXPERIENCE



Redondo Beach is a coastal city located in the South Bay region of Los Angeles County that encompasses 6.3 square miles and has a population of nearly 70,000 residents, including approximately 15,000 children and adolescents under 18 years of age. The city is served by one public school district, the Redondo Beach Unified School District (RBUSD). In addition, the city receives community-based preventive health services from the Beach Cities Health District (BCHD). Established in 1955 and funded through property taxes, lease revenue, user fees, public-private partnership revenues and investment income, the mission of BCHD is “to enhance community health through partnerships, programs and services for people who live and work in Hermosa Beach, Manhattan Beach and Redondo Beach.”

In 2007, faced with an obesity prevalence of 20% among students in Redondo Beach elementary schools, BCHD partnered with RBUSD to launch the LiveWell Kids initiative. The initiative initially focused on a limited number of nutrition education and gardening programs at the District’s eight elementary schools. Over the next several years, the initiative expanded to include more widespread nutrition promotion efforts, healthier school meals, morning exercise activities, classroom activity breaks, a walking school bus program, a LiveWell Tots program for preschoolers, bicycle safety education and mindfulness activities.

In 2010, BCHD was selected as a Blue Zones Project demonstration site,⁶ resulting in community-wide efforts to promote healthier lifestyles through education, encouragement and social support. The project also included a focus on policies, programs and practices that create healthier environments, including healthier food retail options and increased infrastructure for physical activity. In 2012, several schools in RBUSD were recognized by the Alliance for a Healthier Generation and, in 2016, the three Beach Cities (Hermosa Beach, Manhattan Beach and Redondo Beach) received the designation of a Blue Zones Community, generating increased public awareness of and support for local school and community health improvement efforts.

To assess the impact of these efforts on child obesity prevalence, BCHD and RBUSD implemented annual height and weight measurements on all kindergarteners and 1st, 3rd and 5th graders in the District’s eight elementary schools. Data has been analyzed by BCHD staff and results indicated a significant decline in the prevalence of obesity, from the 20% reported in 2007 to 6.4% in 2017. BCHD shared these findings with the Los Angeles County Department of Public Health (DPH) in 2018. To confirm the findings and conduct a more detailed analysis, DPH recruited a graduate student from

Thanks to our partnership with the school district we were able to develop programming to address childhood obesity by improving nutrition and increasing exercise more than a dozen years ago. Several years later, Beach Cities Health District brought the Blue Zones Project to the community to specifically address the health needs of the adult population, utilizing permanent, evidence-based environmental and policy changes in schools, workplaces, restaurants, businesses and city governments. These changes have also positively impacted students by making the healthy choice the easy choice for residents of all ages.

- Tom Bakaly, CEO, Beach Cities Health District

the UCLA Fielding School of Public Health to assist in re-examining the data. The objectives of the analysis were to 1) assess trends in child obesity prevalence overall and by gender, race/ethnicity, grade level and school; and 2) determine if in-migration of students from the neighboring cities of Hermosa Beach and Manhattan Beach, where child obesity rates were considerably lower, may have contributed to the observed decline in obesity prevalence in Redondo Beach.

METHODS

Prior to initiating the analysis, the data was examined for completeness and internal consistency. Based on this examination, data from the 2007-2008 school year was excluded because of missing data from several schools. As a result, the analysis covered the period from the 2008-2009 school year to the 2018-2019 school year (for simplicity, this timeframe will henceforth be referred to as 2009 to 2019 given that in most years measurements were done in the spring semester).

Body mass index (BMI) was calculated for each student based on their measured height and weight. All measurements were obtained via BCHD staff and trained BCHD volunteers using a standardized protocol beginning in 2014. Prior to that, data was collected via nurses contracted through UCLA. Students were classified as obese if their BMI was greater than or equal to the 95th percentile for their age and gender based on standardized growth charts from the Centers for Disease Control and Prevention (CDC). Students were classified as overweight but not obese if their BMI was between the 85th to 94th percentile, normal weight if their BMI was between the 5th to 84th percentile, and underweight if their BMI was less than the 5th percentile. These are the standard definitions to determine childhood overweight and obesity.

I really think the program is important because a lot of kids don't really know where their food comes from. They go to the grocery store, they might see it on their plate when their moms fix it, but it's really opened their eyes to see it from start to finish.

- Casey, Volunteer, LiveWell Kids Program

RESULTS

From 2009 to 2019, the prevalence of obesity among students overall decreased from 13.9% to 6.4% (Figure 1). Similar declines were observed among boys and girls although obesity prevalence was higher among boys than girls throughout the 10-year study period (Figure 2).

Figure 1. Trend in the prevalence of childhood obesity, 2009-2019

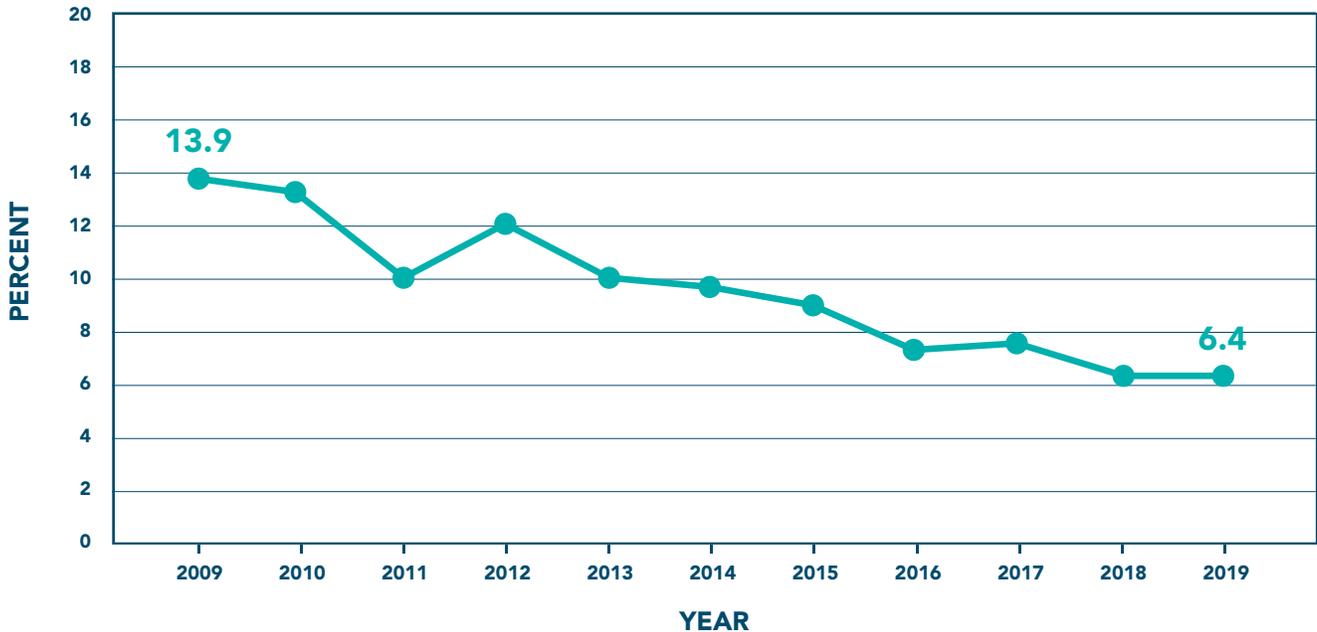
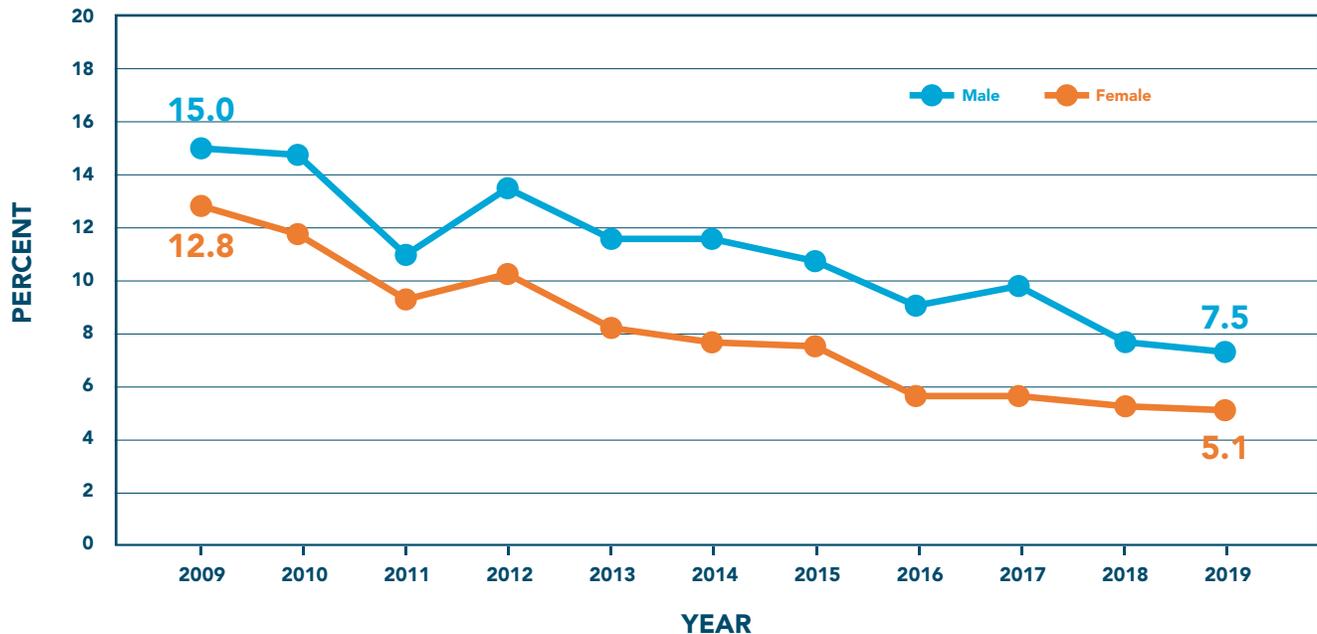
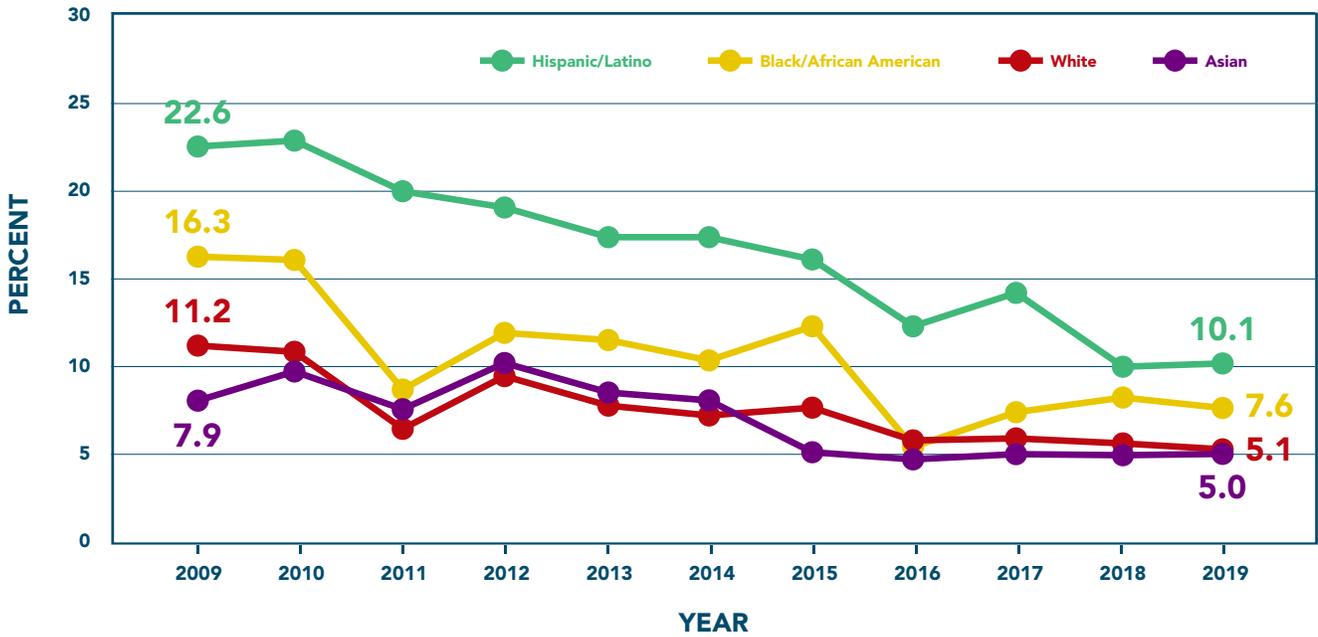


Figure 2. Trends in the prevalence of childhood obesity by gender, 2009-2019



Significant declines in obesity prevalence were also observed across all racial/ethnic groups included in the analysis (Figure 3).⁷ In addition to these improvements, racial/ethnic disparities in obesity prevalence became less prominent over time although they were not eliminated. In 2019, obesity prevalence remained highest among Latino students (10.1%), followed by black students (7.6%), white students (5.1%), and Asian students (5.0%).

Figure 3. Trends in the prevalence of childhood obesity by race/ethnicity, 2009-2019



A decrease in obesity prevalence was observed in all eight elementary schools in the District (Table 1). In 2009, the obesity prevalence was above 10% in all but one of the schools, and above 15% in three schools. However, by 2019, the obesity prevalence was at or below 10% in all eight schools. Decreases in prevalence were also observed across all grade levels, with the largest decrease observed among kindergarteners and 1st graders.

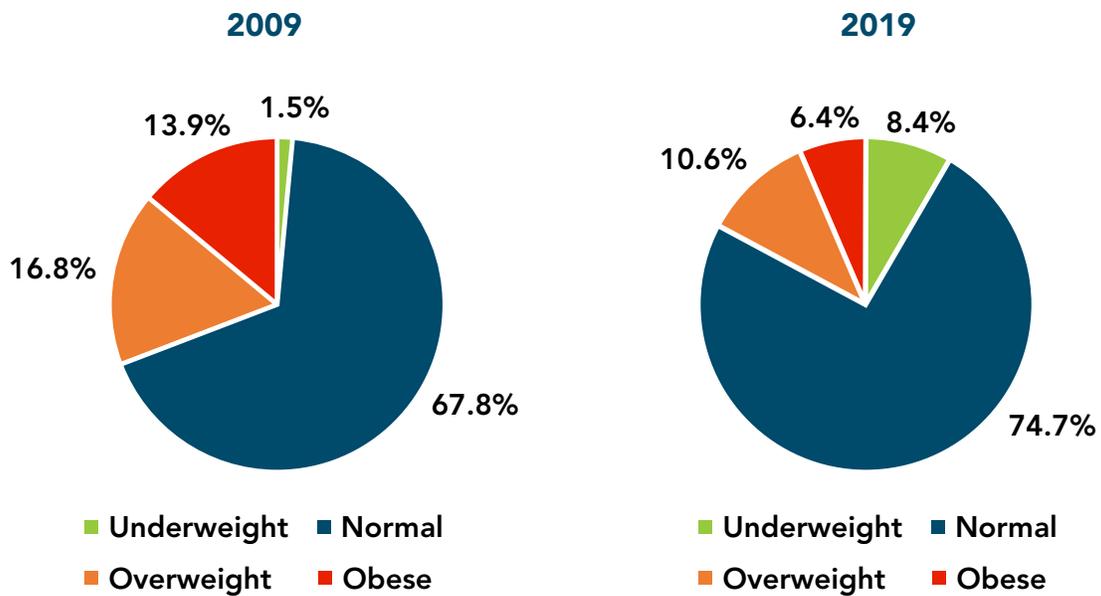
Table 1. Comparison of obesity prevalence by school and grade, 2009 and 2019

School	2009	2019	Relative Percent Change
Alta Vista	11.8%	7.4%	-37.3%
Beryl Heights	11.7%	6.9%	-41.0%
Birney	17.8%	6.5%	-63.5%
Jefferson	8.4%	4.7%	-44.0%
Lincoln	18.2%	3.8%	-79.1%
Madison	14.7%	10.0%	-32.0%
Tulita	10.9%	4.3%	-60.6%
Washington	17.7%	7.3%	-58.8%
Grade level			
Kindergarten	13.4%	4.8%	-64.2%
First	12.2%	4.0%	-67.2%
Third	14.7%	6.8%	-53.4%
Fifth	15.6%	9.5%	-39.1%

When the analysis was restricted to students who resided in Redondo Beach, obesity prevalence declined from 13.5% in 2009 to 5.7% in 2019.

In addition to the decline in obesity prevalence, the percentage of students who were overweight but not obese also decreased, from 16.8% in 2009 to 10.6% in 2019 (Figure 4). Thus, the percentage of children who were either obese or overweight decreased from 30.7% in 2009 to 17.0% in 2019. The percentage of students who were underweight increased from 1.5% to 8.4% during this period.

Figure 4. Comparison of child weight status, 2009 and 2019



DISCUSSION

The results indicate a significant decline in obesity prevalence among elementary school students in RBUSD over the past 10 years. The findings are particularly impressive because they were sustained and observed across all public elementary schools, grade levels and demographic groups. In addition, the findings suggest a reduction in disparities in child obesity prevalence across racial/ethnic groups, a result that has been rarely, if ever, achieved in other locales. The results also indicate that the decline in obesity prevalence was not attributable to migration of school-aged children from neighboring cities into the RBUSD.

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One finding of potential concern was the rise in the prevalence of underweight. Though the underweight designation does not necessarily represent an unhealthy weight status, particularly if the children in this group are growing and gaining weight at a normal rate, a note of caution is warranted given the importance of eating disorders and distorted body image among today's youth and adults.

Although this study was not a formal program evaluation and, importantly, lacked a control group, the predominantly positive results coincided in time with an intensive school-based wellness intervention (LiveWell Kids) and a community-wide wellness initiative (Blue Zones Project). In addition, a similar decline in

child obesity prevalence was not observed in the county overall based on data from the California Physical Fitness Testing Program.⁸ While neither LiveWell Kids or Blue Zones Project were branded as an "obesity prevention" initiative, both included a strong focus on improving nutrition and increasing physical activity.

What might explain the positive results achieved in Redondo Beach? First, both initiatives were fully embraced by city and school leadership, including city elected officials and business leaders, the RBUSD Superintendent, other school administrators and teachers, with the backbone support of BCHD. Second, both initiatives included components that are consistent with the socio-ecologic model of health and wellness.⁹ This model has been well-validated in the research literature and emphasizes the importance of interventions that focus not only on individuals and families, but also on policy interventions and other community strategies that enhance social support for positive behavior change and create environments that promote this change.

Multiple other child obesity prevention efforts have been undertaken in the county over the past two decades that have embraced the socio-ecologic model and have included similar interventions. However, these efforts have been more dispersed and have generally not included the intensity of intervention, sometimes referred to as "dose," as did the Redondo Beach interventions. In addition, the LiveWell Kids initiative included a very strong parent engagement component, with parent volunteers involved in school gardening activities, meal planning, nutrition education and exercise activities.

An important consideration is that Redondo Beach is a primarily middle-class community, in contrast to the much more economically disadvantaged communities in the county where child

obesity rates are highest and, in some cases, exceed 30%.³ In RBUSD, 17% of students were eligible for free or reduced-price meals in 2017-2018. More economically disadvantaged communities may face additional challenges in implementing similar interventions with the same intensity. For example, parents in many lower income communities may both need to work, making it very difficult to volunteer in school activities. In addition, schools in these communities may have fewer resources to support the school-based activities implemented in Redondo Beach. Neighborhoods in these communities likely have more toxic food environments than in Redondo Beach, and have fewer safe spaces for physical activity.

Despite these differences, the success in Redondo Beach suggests that a multi-faceted approach that embraces the socio-ecologic model, if administered with adequate intensity (i.e., "dose"), may alter the curve on the childhood obesity epidemic and even reduce the stark racial/ethnic disparities in obesity prevalence that are so pervasive. Further research, with a more rigorous evaluation design that includes a control group, is needed to confirm these findings and assess the effectiveness of similar interventions in less economically advantaged communities of color.

For the past 10 years, RBUSD has been at the forefront of the 'whole child' movement. The fact that all 12 of our schools made the list of America's Healthiest Schools exemplifies our genuine commitment to the total well-being of our kids. It's also a testament to our strong partnership with Beach Cities Health District, as their leadership and programs are key components of our success.

- Dr. Steven E. Keller, Superintendent of Schools, RBUSD



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THE FOLLOWING CONTRIBUTED TO THIS REPORT:

Los Angeles County Department of Public Health

- Paul Simon, MD, MPH, Chief Sciences Officer
- Rashmi Shetgiri, MD, MSHS, MSCS, Director, Office of Health Assessment and Epidemiology

UCLA Fielding School of Public Health

- Christian Palacios, MPH candidate, June 2020

Beach Cities Health District

- Ali Steward, MPH, Director of Youth Services
- Tessa Garner, MPH, Parent Engagement Coordinator
- Ronnie Kuwahara, MPH, Health Promotions & Communications Specialist
- Kelvin Chung, Sr. Graphic Designer
- Tom Bakaly, Chief Executive Officer

Redondo Beach Unified School District

- Steven Keller, EdD, Superintendent
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