



Obesity in California: The Weight of the State, 2000-2014

2016

**California Department of Public Health
in collaboration with
Nutrition Policy Institute, UCANR
Nutrition Education and Obesity Prevention Branch**

Executive Summary

Introduction

The United States continues to confront an obesity epidemic that is detrimental to the health of individuals, limits worker productivity, and is associated with excess disease burden and contributes to high medical and social costs. While California's obesity rate is lower than that of most other states, as one of the most populous states, the number of individuals affected by obesity and obesity-related health conditions is high.^{1,2} The costs of obesity and its consequences continue to burden the physical and economic health of the State.

The Healthy People 2020 report created targets for reducing the national prevalence of obesity among adults to ≤ 30.5 percent and among children and adolescents ages 2-19 to ≤ 14.5 percent.³ In order to help reach those targets, California developed The California Obesity Prevention Plan, which focuses on establishing policies and environments throughout the State to improve population diet and physical activity.⁴ The policy and environmental change approaches highlighted in the Plan aim to increase breastfeeding; decrease consumption of sugar-sweetened beverages; decrease consumption of energy dense, nutrient poor foods; increase fruit and vegetable consumption; increase physical activity; and reduce television viewing time. There is still much work to be done in encouraging these behaviors in the California population, as survey data found that a substantial proportion of Californians did not meet the recommendations.⁵⁻⁷

Measuring Obesity in California

In order to understand whether the State is making progress towards meeting the Healthy People 2020 and Obesity Prevention Plan goals, this report focuses on obesity prevalence rates, drawing upon three different data sets that provide a snapshot of rates of obesity among various subpopulations of California. The data sets include:

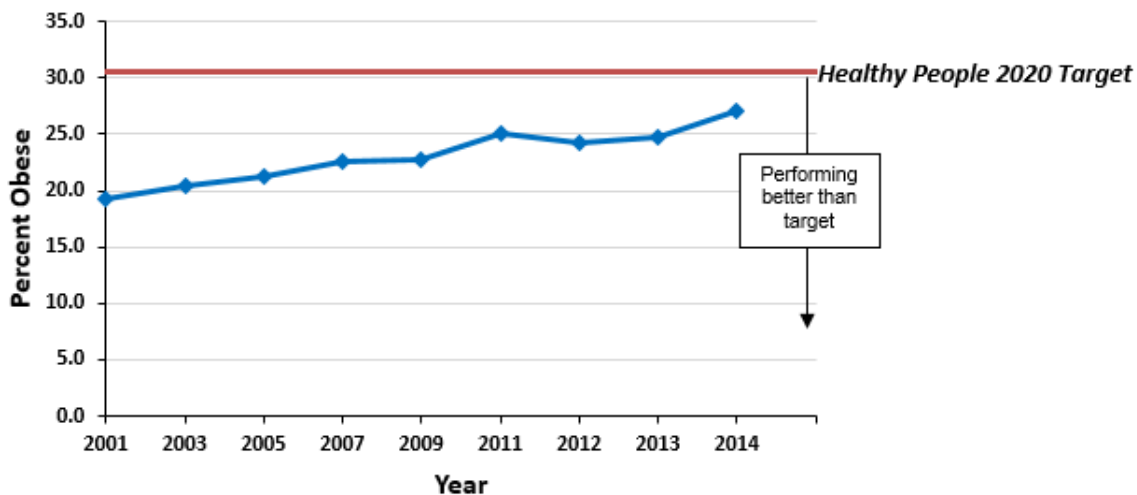
1. The California Health Interview Survey (CHIS), which provides estimates of adult and adolescent obesity obtained by self-report during telephone interviews.^{6,8,9} This survey is designed to provide representative estimates of population obesity each year; however, the sample is not adequate to allow for subgroup estimates annually. CHIS also provides estimates of overweight-for-age for children ages 2-11. This measure uses only weight and age, without adjusting for height.
2. FitnessGram, which is an annual physical fitness assessment administered to all 5th, 7th, and 9th grade students in public schools in California, provides estimates of obesity among California's children and adolescents.¹⁰ Part of the FitnessGram assessment involves measuring all students' height and weight in order to calculate body mass index (BMI) for each student. FitnessGram provides solid population measures, but is limited in that it only captures students at three grade levels.
3. The Champions for Healthy Change (C4HC) study, which is conducted by the California Department of Public Health to evaluate its Supplemental Nutrition Assistance Program education (SNAP-Ed) program, provides estimates of

obesity for the subpopulations participating in the study. Part of the study involves collecting self-reported height and weight from the participating low-income mothers and their children. The BMI values that can be calculated from this sample also are based on self-reports, but provide an estimate of obesity among this very specific population group of SNAP eligible mothers and children from 17 counties in California.

Estimates of Adult Obesity in California

According to the CHIS Survey, **27.0 percent of adults in California were obese in 2014**, an increase in obesity prevalence of nearly 40 percent since 2001, but a prevalence below the Healthy People 2020 national target of ≤ 30.5 percent.^{3,11}

Prevalence of Obesity Among California Adults, CHIS, 2001-2014



However, rates of adult obesity **varied substantially by subgroup**, with some groups falling well below the Healthy People 2020 targets and others far exceeding them:

- Geographically, some **counties** had obesity rates as low as **11.8 percent** (San Francisco) while others had rates as high as **43.5 percent** (Imperial).⁶
- While the obesity rate among **young adults** (ages 18-24) was **13.1 percent**, the rate of obesity among **Californians ages 51-64** was **34.1 percent**.⁶
- Obesity rates among **African Americans** and **Latinos** were **higher** than the Healthy People 2020 target while those for non-Latino White and Asian Californians fell below the target. Obesity rates were slightly higher among adult men than women for Latinos (35.4 percent vs. 33.3 percent, respectively) as well as non-Latino Whites (25.2 percent vs. 22.9 percent) and Asians (15.9 percent vs. 9.8 percent). Obesity rates among African American women (49.8 percent) were substantially higher than among African American men (31.5 percent).⁶
- Obesity rates among **African American women (49.8 percent)** were **5 times higher** than those among **non-Latino Asian women (9.8 percent)** and **more than double the rate of White women (22.9 percent)**. Obesity rates among **Latina women (33.3 percent)** were more than three times as high as among

Asian women and were nearly 50 percent higher than among non-Latina White women.⁶

- Obesity rates declined with increasing household income. The **most impoverished Californians** (those with household incomes below 100 percent of the federal poverty level) had an obesity rate of **31.4 percent**, while the group at or **above 500 percent** of the FPL level had an obesity rate of **22.5 percent**.⁶

Estimates of Adolescent Obesity in California

Two sources of data provide estimates of obesity among California adolescents, FitnessGram and CHIS.

According to the FitnessGram measures:

- **17.2 percent of 9th graders and 19.1 percent of 7th graders in California were obese** during the 2014-2015 school year.¹⁰
- Obesity rates varied among students according to the ethnic group with which they identify. **Hispanic/Latino students** were by far the **largest subgroup** in California, and have obesity rates that were higher than the average: **21.8 percent among 9th graders and 24.8 percent among 7th graders**. However, the highest obesity rates were found among the small population of Native Hawaiian/Pacific Islander students, in which 28.8 percent of 9th graders and 30.4 percent of 7th graders were obese. Asian students had the lowest rates of obesity (7.6 percent among 9th graders, 8.1 percent among 7th graders), followed by non-Latino White students (11.1 percent among 9th graders, 11.7 percent among 7th graders).¹⁰
- A wide divide in obesity rates was seen among students based upon economic disadvantage. **Most of California's 7th and 9th grade public school students** (58.7 percent and 56.2 percent, respectively) were considered **economically disadvantaged**. They had an **obesity rate** that was **more than double** the rate of students who were from households that were not economically disadvantaged (23.9 percent vs. 11.9 percent, respectively).¹⁰

According to the CHIS study:

- The **prevalence of obesity** among California adolescents ages 12-17 has **declined** from 2011 (15.3 percent) to 2014 (14.6 percent).¹²
- The data from 2011-2014 suggests that obesity rates were slightly lower among older adolescents (15-17) than among younger adolescents (14.4 percent vs. 15.5 percent).¹²
- Adolescent obesity rates were highest among non-Latino African American (22.5 percent) and Latino (20.2 percent) adolescents, and lowest among non-Latino Asian (5.2 percent) and White (9.2 percent) adolescents.¹²
- Adolescents from the most impoverished households (below 100 percent FPL) had higher rates of obesity than those from the highest income households (>300 percent FPL) (20.4 percent vs. 12.7 percent).¹²

Estimates of Child Obesity in California

Obesity rates among children in California are available for 5th grade students from the FitnessGram assessments. The CHIS study only provides information about overweight-for-age, because parental reports of children's height are known to be unreliable. Thus, understanding the prevalence of obesity among children younger than 12 in California is challenging.

According to FitnessGram measures:

- **20.9 percent** of California **5th grade students** were **obese** in the 2014-2015 school year.¹⁰
- Obesity was **higher** among **male** 5th grade students (23.8 percent) than among female 5th grade students (18.1 percent).¹⁰
- **Latinos** comprised the **largest group** of 5th graders and had an **obesity** rate of **27.4 percent**. Non-Latino white students were the next largest population and had an obesity rate of 12.0 percent. The highest rate of obesity was found among the small group of Native Hawaiian/Pacific Islander 5th grade students (34.2 percent). The lowest rate of obesity was found among Asian 5th grader students (10.1 percent).¹⁰
- **Most** 5th grade students were considered **economically disadvantaged**. This group had an **obesity rate** that was **more than double** the rate for 5th grade students who were not economically disadvantaged (26.4 percent vs. 12.6 percent).¹⁰

According to CHIS:

- Fifteen percent of California children (ages 2-11) were overweight for their age in 2014.⁶ This includes children who would be considered obese.
- The rate of overweight-for-age among California children was 14.4 percent in 2011, declined in 2012 and 2013, but then rose again in 2014.¹²
- Males had higher rates of overweight-for-age than females (14.9 percent vs. 11.6 percent)¹²
- African American and Latino children had higher rates of obesity than Non-Latino White children (19.7 percent vs. 16.2 percent vs. 8.5 percent, respectively).¹²
- Children from the most impoverished households (household income <100 percent FPL) had much higher rates of obesity (19.0 percent) than children from higher income families (household income >300 percent FPL) (10.8 percent, 7.4 percent, and 7.8 percent among children with household incomes of 300-399 percent FPL, 400-499 percent FPL, and ≥500 percent FPL, respectively).¹²

Conclusion

While California's obesity rates, overall, meet the Healthy People 2020 national goal, there is more work to do to reduce the prevalence of obesity. Disparities persist in obesity rates, with substantially higher rates among Californians with the lowest household incomes, as well as among some ethnic groups in California.

If California is to ensure that all of its residents achieve their life's full potential, it is imperative to address the structural inequalities that produce disparate obesity rates

among various population subgroups. Obesity has tremendous personal and public costs. Some estimates suggest that the state is paying billions in obesity-related hospital expenses annually, and that a reduction in just 5 percent of the adult obesity rate could save the State \$81.7 billion in obesity-related healthcare costs by 2030.² Efforts to improve population diet and activity in order to reduce obesity and chronic disease will improve the physical health of individual Californians as well as the productivity, health, well-being, and fiscal strength of the State.

Executive Summary References

1. RWJF. State of Obesity: 2016.
2. Trust for America's Health, Foundation RWJ. *F as in Fat: How Obesity threatens America's Future*. Washington, DC, 2012.
3. United States Department of Health and Human Services. Healthy People 2020, Topics and Objectives. <http://www.healthypeople.gov/2020/topicsobjectives2020/default.aspx>. Accessed October 24, 2016.
4. California Department of Public Health Obesity Prevention Program. California Obesity Prevention Plan: A Vision for Tomorrow, Strategic Actions for Today. 2010.
5. Nutrition, Physical Activity and Obesity Data, Trends and Maps web site. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity and Obesity, Atlanta, GA, 2015. Available at <http://www.cdc.gov/nccdphp/DNPAO/index.html>.
6. University of California Los Angeles, Center for Health Policy Research. California Health Interview Survey 2014. 2014. <http://ask.chis.ucla.edu/main/default.asp>. Accessed October 24, 2016.
7. California Department of Public Health, Nutrition Education and Obesity Prevention Branch. Behavior Risk Factor Surveillance System 2013.
8. UCLA Center for Health Policy Research. CHIS Making and Impact - 2015. <http://healthpolicy.ucla.edu/chis/about/Documents/CHISImpactFS2015.pdf>. Accessed October 10, 2016.
9. UCLA Center for Health Policy Research. CHIS 2013-2014 Sample Design. http://healthpolicy.ucla.edu/chis/design/Documents/sample_desc_2013.pdf. Accessed October 10, 2016.
10. California Department of Education. Physical Fitness Test Results. <http://data1.cde.ca.gov/dataquest/PhysFitness/PFTDN/Summary2011.aspx?r=0&t=4&y=2014-15&c=00000000000000&n=0000>. Accessed October 25, 2016.
11. University of California Los Angeles, Center for Health Policy Research. California Health Interview Survey 2001-2014. 2001-2014.
12. University of California Los Angeles, Center for Health Policy Research. California Health Interview Survey 2011-2014. 2011-2014.

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Introduction

Obesity in the United States

Since the late 1970s, obesity rates have risen dramatically in the United States (US), among both adults and children. The most recent data from the 2013-2014 US National Nutrition Examination Survey (NHANES) found obesity prevalence of 37.7 percent for adults aged 20 years and over, with somewhat higher figures among adult women (40.4 percent) than adult men (35.0 percent).¹ These prevalence estimates reflect a significant increase in obesity over the last decade for women, but not for men. For children and youth (ages 2-19), NHANES data from 2013-14 show obesity prevalence at 17.0 percent, about half that for adults.² Obesity prevalence increased with age among children; estimates for children aged 2-5 years, 6-11 years, and 12-19 years were 9.4 percent, 17.4 percent, and 20.6 percent, respectively. The analysis of trends among children include data that extend back to the 1980s, and while the prevalence for all child age groups were higher in 2013-14 than in the 1980s, some differences between age groups can be seen. For example, among 2-5 year olds, obesity rates increased until 2007-08, and then decreased. For 6-11 year olds, obesity increased until 2007-08, and then remained stable. And for adolescents, obesity increased steadily from the 1980s to 2013-14.

Significant disparities in obesity prevalence persist between different sub groups of the US population. In 2013-14, obesity was most prevalent among African American and Hispanic populations, and lower among Asian adults, compared with Non-Hispanic whites. African American and Hispanic women had the highest rates at 56.9 percent and 45.7 percent, respectively.³ There are also disparities in obesity prevalence by socioeconomic status, with obesity being less prevalent among adults with higher levels of education.⁴ Regional disparities in obesity prevalence also exist in the US. Among adults, the West has the lowest prevalence of obesity at 25.2 percent, followed by the Northwest (26.4 percent), the Midwest (30.7 percent) and the South (31.2 percent). Among children ages 10-17, the Northwest has the lowest prevalence of overweight and obesity (14.6 percent) followed by the West (21.5 percent), Midwest (22.2 percent), and South (41.8 percent).⁵

The high prevalence of obesity is associated with increasing rates of chronic diseases including type 2 diabetes,⁶ cardiovascular disease,⁷ and cancer,⁸ as well as premature mortality.⁹ The obesity epidemic is also associated with substantial costs to society associated with elevated health care expenditures¹⁰ and reduced worker productivity.^{11,12} The California Department of Public Health has been monitoring obesity rates in the population utilizing available data sources to track the percentage of the population and sub-groups affected by overweight and obesity and select risk factors. This report presents a compilation of those data to describe the prevalence of

obesity and overweight in California, as well as to present population estimates for some of the key risk factors associated with the development of excess weight.

National Targets for Obesity Reduction

Healthy People 2020

Healthy People 2020 provides national goals and targets for improving the health of Americans.¹³ This report compares current estimates of obesity prevalence among Californians with the corresponding *Healthy People 2020* targets.

The *Healthy People 2020* weight-status objectives include specific targets for reducing obesity, with the goal of achieving a 10 percent improvement over the 2010 prevalence estimates. The *Healthy People 2020* targets for obesity among adults, adolescents, and children are as follows:

- Reduce the proportion of adults who are obese to \leq 30.5 percent.
- Reduce the proportion of children and adolescents aged 2 to 19 years who are considered obese to \leq 14.5 percent.
Reduce the proportion of adolescents aged 12 to 19 years who are considered obese to \leq 16.1 percent.
- Reduce the proportion of children aged 6 to 11 years who are considered obese to \leq 15.7 percent.
- Reduce the proportion of children aged 2 to 5 years who are considered obese to \leq 9.4 percent.

Indicators of Overweight and Obesity Prevalence

Body mass index (BMI), calculated by dividing an individual's weight (in kg) by their height (in m²), is widely used as an indicator of overweight and obesity. Although the measure has limitations in assessing whether an individual has excessive body fat, this measure generally is considered useful at the population level.

Overweight and obesity generally are defined as follows:

- Overweight:
 - Adults with a BMI between 25.0 and 29.9 kg/m²
 - Children and adolescents whose BMI falls between the 85th and 95th percentiles (according to growth charts developed in 2000 by the U.S. Centers for Disease Control and Prevention¹⁴)
- Overweight-for-age:
 - Children with a weight-for-age above the 85th percentile according to growth charts developed in 2000 by the U.S. Centers for Disease Control and Prevention¹⁴ (sometimes used when accurate measures of height are not available)
- Obese:
 - Adults with a BMI of 30 kg/m² or higher

- Children and adolescents with a BMI at or above the 95th percentile according to growth charts developed in 2000 by the U.S. Centers for Disease Control and Prevention¹⁴

The California Obesity Prevention Plan

The state of California has developed an Obesity Prevention Plan that outlines six nutrition and physical activity behaviors the state will work to improve in order to support population weight and health goals. The plan and the supporting evidence for the behaviors it targets are described below.

California Obesity Prevention Plan

The California Obesity Prevention Plan focuses on policy and environmental change, based on emerging evidence indicating that environmental factors play a critical role in efforts to address the obesity epidemic.¹⁵

The Plan incorporates strategies that address the Center for Disease Control and Prevention's (CDCs) evidence-based target areas, and encourages California to improve population diet and fitness by implementing efforts to:

- Increase breastfeeding initiation, duration, and exclusivity.
- Decrease consumption of sugar-sweetened beverages.
- Decrease consumption of low nutrient, energy-dense foods (foods that are high in calories but have little nutritional value).
- Increase consumption of fruits and vegetables.
- Increase physical activity.
- Decrease television viewing time.

Rationale for California Prevention Plan Objectives

The state objectives are underpinned by evidence of the associations between dietary and physical activity behavior and weight status. Dietary behaviors for which at least moderate evidence indicates a relationship with obesity include consumption of sugar sweetened beverages,¹⁶ fast food,¹⁷ and other energy dense foods of minimal nutritional value.¹⁸ There is also at least moderate evidence that breastfeeding in the first year of life is protective against obesity;¹⁹ and, there is some evidence suggesting that consumption of fruits and vegetables is inversely associated with weight change as well.²⁰ As such, it may be that consumption of fruits and vegetables is a protective factor against obesity. Increases in physical activity frequency, intensity, and duration,^{21,22} and decreases in time spent in sedentary activity are also inversely related to obesity.^{23,24}

Environmental factors can either detract from, or promote, healthy eating and active living, in places where people live, study, work, and play.²⁵ A lack of access and

resources to purchase healthy, affordable foods including fresh fruits and vegetables and easy access to fast food and family restaurants with unhealthy options and oversized portions contribute to obesity risk.²⁶⁻³⁰ Lack of access to safe places to exercise in neighborhoods,^{31,32} busy work schedules,³³ and social norms related to television (TV) and computer use are notable barriers to physical activity.^{34,35}

State Obesity and Risk Factor Surveillance - Data Sources

Population surveillance of obesity, and its associated risk factors, requires ongoing collection and analysis of accurately measured heights, weights, and related health behaviors from a representative sample of the population. Assessment of population subgroups, such as children and adolescents, low-income individuals and families, and particular racial and ethnic groups requires additional sampling efforts. Measured heights and weights are known to be more accurate than those collected by self-report. Yet, because collecting measures of heights and weights on large samples of the population is expensive, many surveys rely on self-reported height and weight measures. Where possible, this report utilizes the strongest sources of population health and behavioral data, in order to present a snapshot of the weight status, dietary, and physical activity behaviors of California's population.

This report presents obesity prevalence data from two different representative samples of the California population: the California Health Interview Survey (CHIS) and the Physical Fitness Test (FitnessGram) measured in schools. Each of these data sources, described below, has strengths and weaknesses.

CHIS

The nation's largest state health survey, CHIS, includes more than 20,000 households and is conducted by the University of California, Los Angeles Center for Health Policy Research.³⁶ It is a statewide, random-digit-dial telephone survey, with results that are representative of the population of California.³⁷ Since 2011, CHIS has been conducted on a continuous basis, providing annual estimates; prior to 2010, CHIS was conducted biennially.

CHIS provides estimates of statewide obesity prevalence for adults (18 years and older) and adolescents (12-17 years) based on BMI calculations using self-reported heights and weights obtained from telephone interviews. CHIS also provides prevalence estimates of overweight-for-age among children (2-11 years) obtained from parent reports of children's weights. Self-reported measures of height and weight tend to be inaccurate, particularly among children.³⁸ In CHIS, weight-for-age is used for children, because studies have shown that parents are unable to report accurate height measurements for their children.

CHIS also provides self-reported estimates of consumption of fruits and vegetables, soda and other sugary beverages, fast food, as well as physical activity and sedentary behavior.

In this report, where feasible, obesity prevalence rates are derived from 2014 CHIS, to provide the most recent estimates for weight and health indicators. However, for some subpopulations, inadequate annual sample sizes required pooling the data from multiple years in order to obtain a statistically stable prevalence estimate.

FitnessGram

FitnessGram is a health-related, physical fitness test administered to all 5th (n=455,897), 7th (n=439,476), and 9th (n=441,730) grade public school students in California. It was developed by The Cooper Institute and includes measured aerobic capacity, strength, and flexibility, in addition to the measured heights and weights that are used to calculate BMI. FitnessGram data allow for the stratification of results by sex, race/ethnicity, and socioeconomic status. Socioeconomic status was defined as either economically disadvantaged or not economically disadvantaged based on the student's parent/guardian's highest educational attainment and the student's eligibility for free or reduced price meals in the National School Lunch Program. The FitnessGram data for obesity prevalence presented in this report were collected during the 2014-2015 school year.³⁹

Data Limitations

The estimates from CHIS data presented here rely on self-reports and don't provide a large enough sample size for most subgroups to allow for annual point estimates and statewide tracking of obesity progress. While the FitnessGram estimates presented in this report are measured, they are only available for students in three grades. For adolescents, there are differences between the measured FitnessGram obesity rates for adolescents and the CHIS self-reported estimates.

Additional data sources

Two other surveys were used to obtain prevalence estimates of selected nutrition-related and physical activity behavior.

National Immunization Survey

Breastfeeding prevalence estimates for California were derived from the National Immunization Survey, a telephone survey conducted by the CDC's National Center for Immunization and Respiratory Diseases. This report includes data for children born in 2012.⁴⁰

Behavioral Risk Factor Surveillance System (BRFSS)

Data on physical activity among California adults in 2013 were obtained from the BRFSS, a telephone survey of more than 400,000 adults conducted each year on health-related risk behaviors, chronic health conditions, and use of preventive services.⁴¹

Champions for Healthy Change

This report also includes data from a special study of a select population of low-income Californians, Champions for Healthy Change (C4HC). Conducted by the California Department of Public Health, C4HC is a telephone survey of a random sample of mothers/female caregivers (n=6,281 women) and their children (n=1,693 adolescents and 2,735 children) who are enrolled in the Supplemental Nutrition Assistance Program (SNAP). The sample represents the 17 counties that have the largest SNAP-eligible populations in California (Appendix Table 1). BMI is calculated from self-reported heights and weights. C4HC data are not generalizable to the state of California, but provide insights about the SNAP-eligible population within the 17-county C4HC sample.

In this report, the following definitions are used for categorizing individuals as adults, adolescents, and children:

- **Adults:** 18 years or older
- **Adolescents:** 12 to 17 years
- **Children:** 2 to 11 years
 - **Younger children:** 2 to 5 years
 - **Older children:** 6 to 11 years

California Prevalence of Selected Risk Factors for Obesity

The following sections summarize recent prevalence estimates for behavioral factors identified in the California Obesity Prevention Plan and selected environmental factors affecting dietary and physical activity behavior. Data from California are compared against recommendations from the American Academy of Pediatrics,^{42,43} the *2015-2020 Dietary Guidelines for Americans*,⁴⁴ the *Healthy People 2020* objectives,¹³ and the *2008 Physical Activity Guidelines for Americans*.⁴⁵

Breastfeeding

*The American Academy of Pediatrics recommends exclusively breastfeeding (no other fluids or solid foods) babies for six months, and continuing to breastfeed, in conjunction with solid foods, for at least a year.*⁴²

- In California 88.3 percent of infants born in 2012 were breastfed at least once (ever breastfed), and 65.9 percent were breast fed for at least 6 months, though only 32.5 percent were exclusively breastfed for those 6 months.⁴⁰ The prevalence of breastfeeding through at least the first year was 43.2 percent.

Table 1. Prevalence of Breastfeeding Among Infants Born in California in 2012, National Immunization Survey

Breastfeeding Status	Percent (95% CI) ^a
Ever Breastfed	88.3% (80.9, 93.0)
Breastfed for at least 6 months	65.9% (58.0, 73.1)
Exclusively Breastfed for at least 6 months	32.5% (25.6, 40.2)
Breastfed through the first year	43.2% (35.8, 51.1)

Notes:

^a95% CI = 95% Confidence Interval

Dietary Behaviors

Sugar-Sweetened Beverages

The 2015 Dietary Guidelines for Americans recommend that added sugars be limited to less than 10 percent of daily calories.⁴⁴ Recommended behavior changes to achieve this goal include reducing the portion size and frequency of sugar-sweetened beverage consumption; selecting beverages low in added sugars; and consuming more beverages with no added sugars, such as water. While the available data do not include estimates of intake of added sugar as a percent of daily calories, this report presents data about the intake of sugar-sweetened beverages and other sugary beverages.

- The most recent CHIS survey indicated that consumption of sugar-sweetened soda (those that report drinking one or more sodas on the previous day) was higher for adolescents (30.5 percent) than for older children (16.8 percent), or young children (10.8 percent).⁴⁶ Adults were asked to report the frequency with which they consumed soda over the past month. For an average week, consumption was lower among adults than children or adolescents, with 10.1 percent of adults reporting drinking, on average, one or more sodas per day. A higher proportion of adolescents also consumed other sugary beverages, such as sweetened fruit drinks, sports and energy drinks, sweetened coffee and tea drinks, etc.⁴⁶ A higher proportion of adolescents (36.6 percent) reported consuming other sugary beverages on the previous day, as compared to older children (21.7 percent) and younger children (14.1 percent).

Fast Food

Although there are no guidelines specifically relating to fast food, the Dietary Guidelines advise consumers to limit daily intakes to less than: 10 percent of calories from added sugars; 10 percent of calories from saturated fats; 2,300 milligrams of sodium; and to limit overall caloric intake to maintain a healthy weight.⁴⁴ These guidelines imply limiting fast food intake, because of their high content of sugar, saturated fat, sodium, and calories.

- Approximately two-thirds of Californian adults (62.7 percent) and young children (65.1 percent) reported eating fast food at least once during the week prior to being surveyed.⁴⁶ Older children and adolescents were more likely to report

having eaten fast food in the past week (73.5 percent and 75.9 percent, respectively).

Consumption of Fruits and Vegetables

The Dietary Guidelines for Americans recommend consuming 1 to 1.5 cup equivalents of vegetables per day for young children, and 2-3 cup equivalents per day for older children, adolescents and adults.⁴⁴ For fruits, the recommendations are 1 to 1.5 cup equivalents for younger children, and 1.5 to 2 cup equivalents per day for older children, adolescents and adults.

- A greater proportion of young children in California ate at least two servings of fruit per day (76.1 percent) compared to the percentage of older children (64.2 percent) and adolescents (54.3 percent) who did so.⁴⁶ Only 20.9 percent of adolescents met the recommendations to consume at least five servings of fruits and vegetables per day.

Table 2a. Prevalence of Key Dietary Factors Influencing Risk of Obesity among California Children and Adolescents, CHIS, 2014

Age (yrs)	Percent that Drank One or More Soda with Sugar in the Past Day (95% CI) ^a	Percent that Drank One or More Sugary Beverages Other than Soda in the Past Day (95% CI)	Percent that Ate Fast Food in the Past Week (95% CI)	Percent that Ate At Least Two Servings of Fruit in the Past Day (95% CI)	Percent that Ate Five or More Servings of Fruits and Vegetables per Day (95% CI)
2-5	10.8% (4.6, 17.0)	14.1% ^b	65.1% ^b	76.1% (69.6, 82.7)	N/A ^c
6-11	16.8% (13.1, 20.4)	21.7% ^b	73.5% ^b	64.2% (59.0, 69.3)	N/A ^c
12-17	30.5% (25.1, 36.0)	36.6% (31.5, 41.7)	75.9% (72.1, 79.7)	54.3% (49.4, 59.3)	20.9% (16.9, 24.8)

Notes:

^a95% CI = 95% confidence interval

^b95% CI not available

^cData not available

Table 2b. Prevalence of Key Dietary Factors Influencing Risk of Obesity among California Adults, CHIS, 2014

Age (yrs)	Percent that Drank One or More Soda with Sugar per Day (95% CI) ^a	Percent that Drank One or More Sugary Beverages Other than Soda in the Past Day (95% CI)	Percent that Ate Fast Food in the Past Week (95% CI)	Percent that Ate At Least Two Servings of Fruit in the Past Day (95% CI)	Percent that Ate Five or More Servings of Fruits and Vegetables per Day (95% CI)
18+	10.1% (9.1, 11.1)	N/A ^b	62.7% (61.3, 64.2)	N/A ^b	N/A ^b

Notes:

^a95% CI = 95% confidence interval

^bData not available

Physical Activity

The 2008 Physical Activity Guidelines for Americans recommend that children and adolescents engage in at least 60 minutes of physical activity every day of the week, and that adults aim for 150 minutes of moderate intensity, or 75 minutes of vigorous activity, plus strengthening exercises each week.⁴⁵

- The percentage of California children and youth meeting the physical activity recommendation progressively declined with age: 41.8 percent of younger children, 31.4 percent of older children, and 12.2 percent of adolescents engaged in at least 60 minutes of physical activity every day of the week.⁴⁶ Among adults, nearly one-quarter (24.4 percent) reported meeting the adult physical activity guidelines.⁴⁷

Table 3. Percent of Californians Meeting the Physical Activity Guidelines, CHIS 2014^a and BRFSS 2013^b.

Age (yrs)	Physical Activity Guideline	Percent that Met Physical Activity Guideline (95% CI) ^{c,d}
2-5 ^a	60+ minutes per day	41.8% (27.7, 55.8)
6-11 ^a	60+ minutes per day	31.4% (25.2, 37.5)
12-17 ^a	60+ minutes per day	12.2% (9.4, 14.9)
18+ ^b	150+ minutes of moderate-intensity or 75+ minutes of vigorous-intensity aerobic activity (or an equivalent combination) ^c per week, along with muscle strengthening exercise 2+ times per week	24.4% (23.2, 25.6)

Notes:
^aCHIS 2014
^bBehavioral Risk Factor Surveillance System Survey 2013
^cFor adults, one minute of vigorous-intensity physical activity counts as two minutes of moderate-intensity physical activity toward meeting the guideline.
^d95% CI = 95% Confidence Interval

Time Spent in Sedentary Activities

The American Academy of Pediatrics recommends limiting children’s screen time to no more than 2 hours per day, and limiting young children’s (2-5 years) digital media use to no more than 1 hour per day.^{43,48} CHIS does not specifically ask about screen time, but asks about sedentary time spent in various activities, including watching television, playing computer games, talking with friends, and engaging in other sitting activities.

- Only 16.6 percent of young children limited sedentary activity time to less than 1 hour.⁴⁶
- Just over half (53.7 percent) of older children limited sedentary activity time to less than 2 hours, while 40.2 percent of adolescents did so.⁴⁶

Table 4a. Percent of California Young Children Meeting the Screen Time Guidelines, CHIS, 2014

Age (yrs)	Screen Time Recommendation ^a	Percent that had less than 1 hour of sedentary activity, including screen time (95% CI) ^b
2-5	No more than 1 hour a day	16.6% (11.5, 21.8)

Notes: Child data is for weekdays after school only.

^aCHIS collects data on all sedentary activities, not specifically on screen time.

^b95% CI = 95% Confidence interval

Table 4b. Percent of California Older Children and Adolescents Meeting the Screen Time Guidelines, CHIS, 2014

Age (yrs)	Screen Time Recommendation ^a	Percent that had no more than 2 hours of sedentary activity, including screen time (95% CI) ^b
6-11	No more than 2 hours a day	53.7% ^c
12-17	No more than 2 hours a day	40.2% (35.9, 44.5)

Notes: Child and adolescent data are for weekdays after school only.

^aCHIS collects data on all sedentary activities, not specifically on screen time.

^b95% CI = 95% Confidence interval

^c95% CI not available

Availability and affordability of healthful foods

While availability and affordability of healthful foods enable individuals to consume a healthy diet, no standard metrics for food access are available against which to compare currently available data about food access.

- While most (76.1 percent) California adults said that fresh fruits and vegetables were always *available* in their neighborhoods, almost 1 in 4 reported that they were usually (10.6 percent), sometimes (9.3 percent), or never (2.9 percent) available.⁴⁶
- When asked how often fresh fruits and vegetables were *affordable* in their neighborhoods, 47.0 percent said always affordable, 31.1 percent said usually affordable, 20.9 percent said sometimes affordable, and 1.1 percent said never affordable.⁴⁶

Table 5. Reported Availability and Affordability of Fresh Fruits and Vegetables in Neighborhoods Among California Adults, CHIS, 2014.

Frequency	Percent reporting how often Fresh Fruits and Vegetables are Available in Neighborhood (95% CI) ^a	Percent reporting how often Fresh Fruits and Vegetables are Affordable in Neighborhood (95% CI)
Always	76.1% (74.8, 77.3)	47.0% (45.5, 48.4)
Usually	10.6% (9.7, 11.4)	31.1% (29.6, 32.5)
Sometimes	9.3% (8.2, 10.3)	20.9% (19.5, 22.2)
Never	2.9% (2.4, 3.4)	1.1% (0.8, 1.3)

Notes:

^a95% CI = 95% Confidence Interval

Perceived safety of nearby parks and playgrounds

Perception of neighborhoods being unsafe has been associated with obesity among adults and children, even after adjustment for socioeconomic characteristics.⁴⁹

- Among California adolescents, 9.5 percent regarded nearby parks or playgrounds as unsafe during the day.⁴⁶

Table 6. Reported perception of Safety of Nearby Parks and Playgrounds Among California Adolescents,^a CHIS, 2014.

Level of agreement	Nearby park or playground safe during the day (% (95% CI) ^b)
Strongly agree	44.2% (39.3, 49.1)
Agree	46.3% (41.9, 50.7)
Disagree	7.5% (4.9, 10.0)
Strongly Disagree	2.0% (1.0, 3.1)

Notes:

^aQuestion was only asked to adolescents

^b95% CI = 95% Confidence Interval

Adult Obesity Prevalence and Trends

The next section describes adult obesity prevalence rates for the state of California. First, obesity rates among all adults are presented, followed by rates for those in

particular population subgroups as indicated by their geographic region of residence, age group, sex, race/ethnicity, and socioeconomic status.

Adult Obesity Prevalence from CHIS

In 2014, 27.0 percent of California adults, numbering approximately 7,700,000 individuals, were obese.⁴⁶ Although, this rate was lower than the *Healthy People 2020* target of ≤ 30.5 percent,¹³ the prevalence of obesity has increased in California by nearly 40 percent since 2001.⁵⁰

Figure 1. Prevalence of Obesity Among California Adults, CHIS, 2001-2014

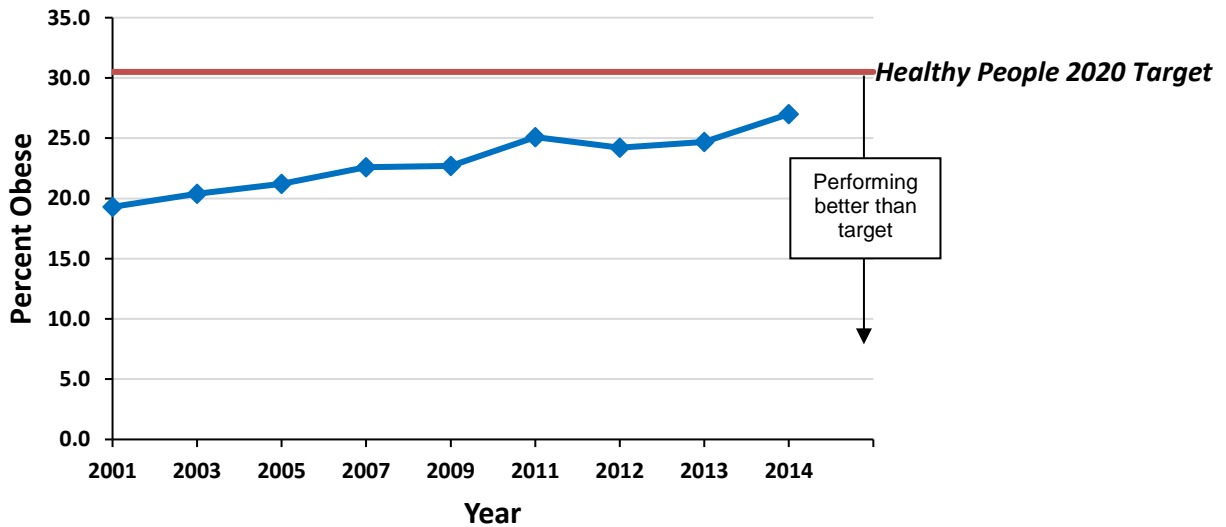


Table 7. Prevalence of Obesity Among California Adults, CHIS, 2001-2014

Year	Percent Obese (95% CI) ^a
2001	19.3% (18.9, 19.8)
2003	20.4% (19.9, 20.9)
2005	21.2% (20.6, 21.8)
2007	22.6% (22.0, 23.2)
2009	22.7% (21.9, 23.6)
2011	25.1% (24.2, 26.1)
2012	24.2% (23.2, 25.2)
2013	24.7% (23.5, 25.9)
2014	27.0% (25.5, 28.6)

Notes:

^a95% CI = 95% Confidence Interval.

Obesity Prevalence among California Adults by County

Data from CHIS in 2013 and 2014 were pooled to calculate adult obesity prevalence estimates for each county in California. During this period, 13 counties had higher prevalence rates of obesity than the Healthy People 2020 target of ≤ 30.5 percent.^{13,51} In comparison, no counties surpassed the target in 2001.⁵² San Francisco County had the lowest obesity prevalence in 2013-14, 11.5 percent, which had remained stable over the period 2001 to 2013-14. Imperial County had the highest prevalence of obesity in 2013-2014 (43.5 percent), nearly a 50 percent increase from the 2001 estimate of 29.0 percent. For most counties, prevalence rates for obesity increased from 2001 to 2013-14. The exceptions were Contra Costa and Nevada counties, which had lower obesity prevalence rates in 2013-2014 compared to 2001.^{51,52}

Figure 2. Prevalence of Obesity Among California Adults, by County, CHIS, 2013-2014 (pooled)

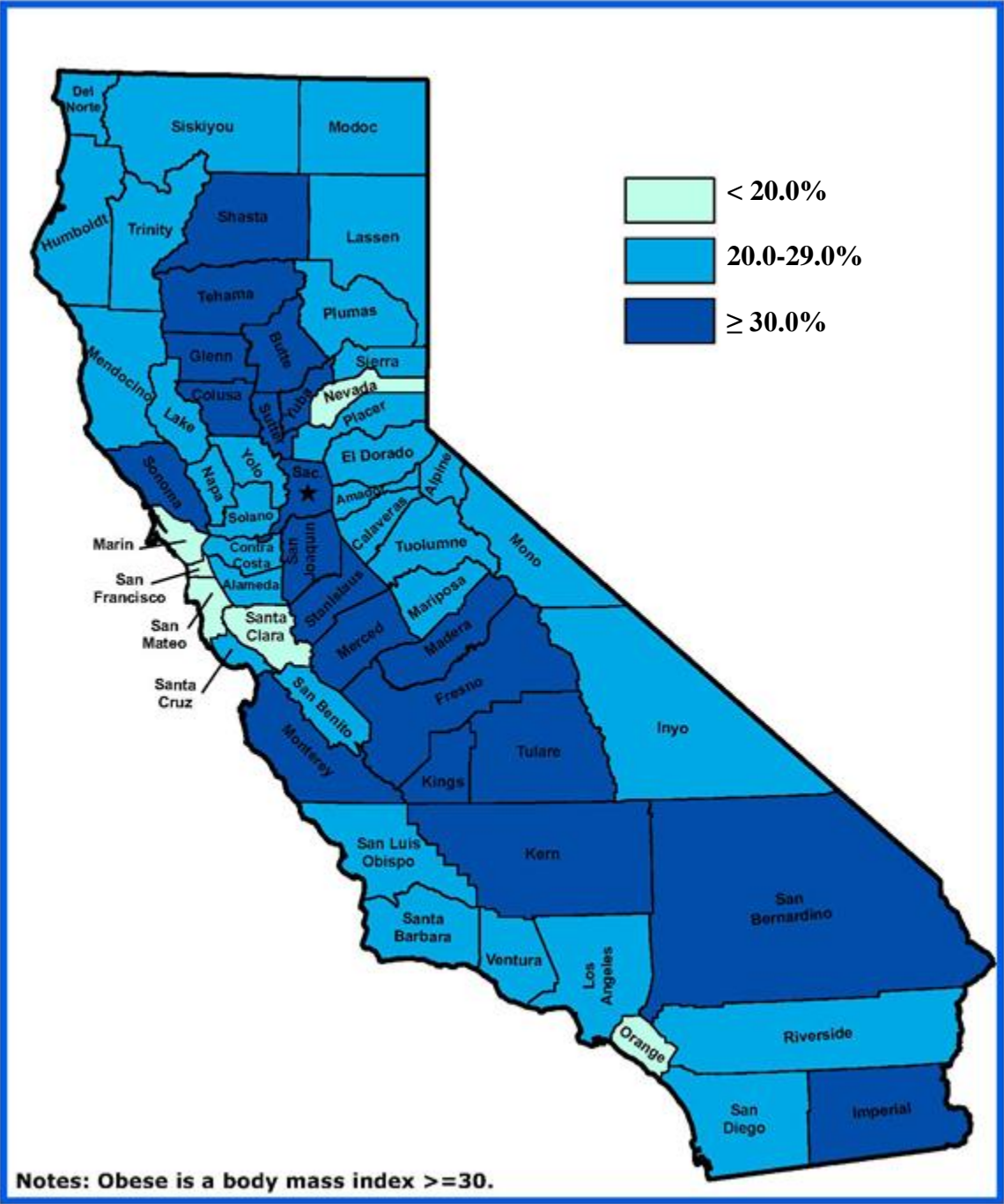


Table 8. Prevalence of Obesity Among California Adults, by County, CHIS, 2001 and 2013-2014 pooled

County	2001		2013-2014		Percent Change in % Obese 2001-2013/14
	% Obese	Rank*	% Obese	Rank*	
Alameda	17.4	13	21.7	9	24.7
Butte	18.9	19	29.8	28	57.7
Contra Costa	20.4	21	20.3	7	-0.5
Del Norte, Siskiyou, Lassen, Trinity, Modoc, Plumas, Sierra	22.7	28	24.2	15	6.6
El Dorado	18.3	17	22.4	10	22.4
Fresno	26.3	40	39.3	41	49.4
Humboldt	22	26	27.3	24	24.1
Imperial	29	42	43.5	44	50.0
Kern	25.6	36	40.5	42	58.2
Kings	27.1	41	41.2	43	52.0
Lake	26.1	38	28	25	7.3
Los Angeles	20.1	20	26	22	29.4
Madera	25.4	35	33.9	36	33.5
Marin	11.8	2	12.2	2	3.4
Mendocino	21.7	24	22.9	11	5.5
Merced	29.6	43	30.3	31	2.4
Monterey	25.3	33	30.8	32	21.7
Napa	17.7	16	23.5	12	32.8
Nevada	15.6	7	14.5	3	-7.1
Orange	14.8	4	19.5	5	31.8
Placer	15.7	8	23.5	13	49.7
Riverside	20.9	23	26.9	23	28.7
Sacramento	21.8	25	29.1	27	33.5
San Benito	-	-	25.4	21	-
San Bernardino	24.9	32	35	37	40.6
San Diego	16.5	10	24.2	16	46.7
San Francisco	11.5	1	11.8	1	2.6
San Joaquin	25.6	37	32.2	34	25.8
San Luis Obispo	16.3	9	20.4	8	25.2
San Mateo	17.4	13	18.5	4	6.3
Santa Barbara	17.2	12	28.6	26	66.3
Santa Clara	15.5	6	20	6	29.0
Santa Cruz	15.2	5	23.7	14	55.9

Shasta	20.8	22	29.8	29	43.3
Solano	22.5	27	24.3	17	8.0
Sonoma	14.1	3	29.9	30	112.1
Stanislaus	24.8	31	35.9	40	44.8
Sutter	25.3	34	31.2	33	23.3
Tehama, Glenn, Colusa	24.3	30	33.1	35	36.2
Tulare	23.9	29	35.6	39	49.0
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono, Alpine	16.7	11	24.8	19	48.5
Ventura	17.5	15	25.2	20	44.0
Yolo	18.6	18	24.5	18	31.7
Yuba	26.1	39	35.5	38	36.0

*Counties are ranked from lowest to highest obesity prevalence; 1=the county with the lowest obesity prevalence rate in 2013-2014

Obesity Prevalence among California Adults by Age Group

The prevalence estimates of obesity among California adults were at or below the Healthy People 2020 target of ≤ 30.5 percent for all age groups, except for adults aged 51-64 years, who exceeded the target with an obesity rate of 34.1 percent.^{13,46} Obesity rates among younger and older adults (18-34 years, and 65 and older), were below the 2020 target of ≤ 30.5 percent (13 percent and 25 percent obese, respectively), while the rates for 35-50 year-olds were at the target of ≤ 30.5 percent.

Figure 3. Prevalence of Obesity Among California Adults, by Age, CHIS, 2014

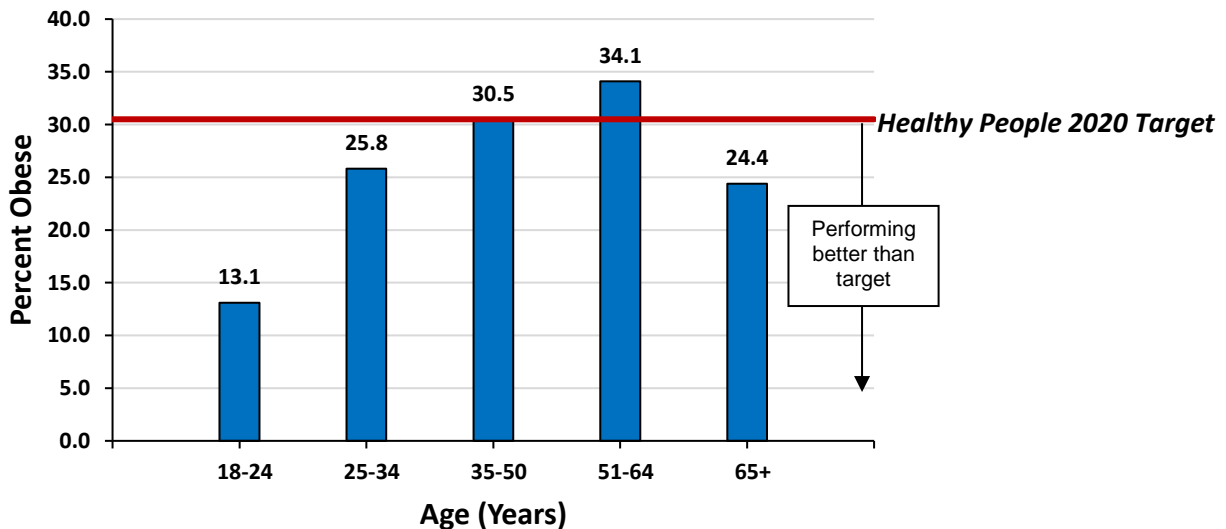


Table 9. Prevalence of Overweight and Obesity Among California Adults, by Age, CHIS, 2014

Age (years)	Percent Obese (95% CI) ^a
18-24	13.1% (9.9, 16.3)
25-34	25.8% (21.9, 29.7)
35-50	30.5% (27.8, 33.2)
51-64	34.1% (30.9, 37.3)
65+	24.4% (21.7, 27.1)

Notes:

^a95% CI = 95% Confidence Interval.

Obesity Prevalence among California Adults by Sex and Race/Ethnicity

The prevalence of obesity in California in 2014 varied substantially among subgroups according to sex and race/ethnicity.⁴⁶ While obesity rates for non-Latino White and non-Latino Asian Californians met the Healthy People 2020 targets, the rates for non-Latino African American and Latino adults exceeded 30.5 percent.^{13,46} Obesity rates were lowest among non-Latino Asian women (9.8 percent) and men (15.9 percent) and highest among non-Latino African American women (49.8 percent) and Latino men (35.4 percent). While the obesity rates for men varied substantially by race/ethnicity, with Latino men having more than double the rate of obesity of non-Latino Asian men, the disparities among women were even more dramatic. Among women, the prevalence of obesity among non-Latino African American women was five times the rate of non-Latino Asian women, and more than double the rate among non-Latino White women.

Figure 4. Prevalence of Obesity Among California Adults, by Sex and Race/Ethnicity, CHIS, 2014

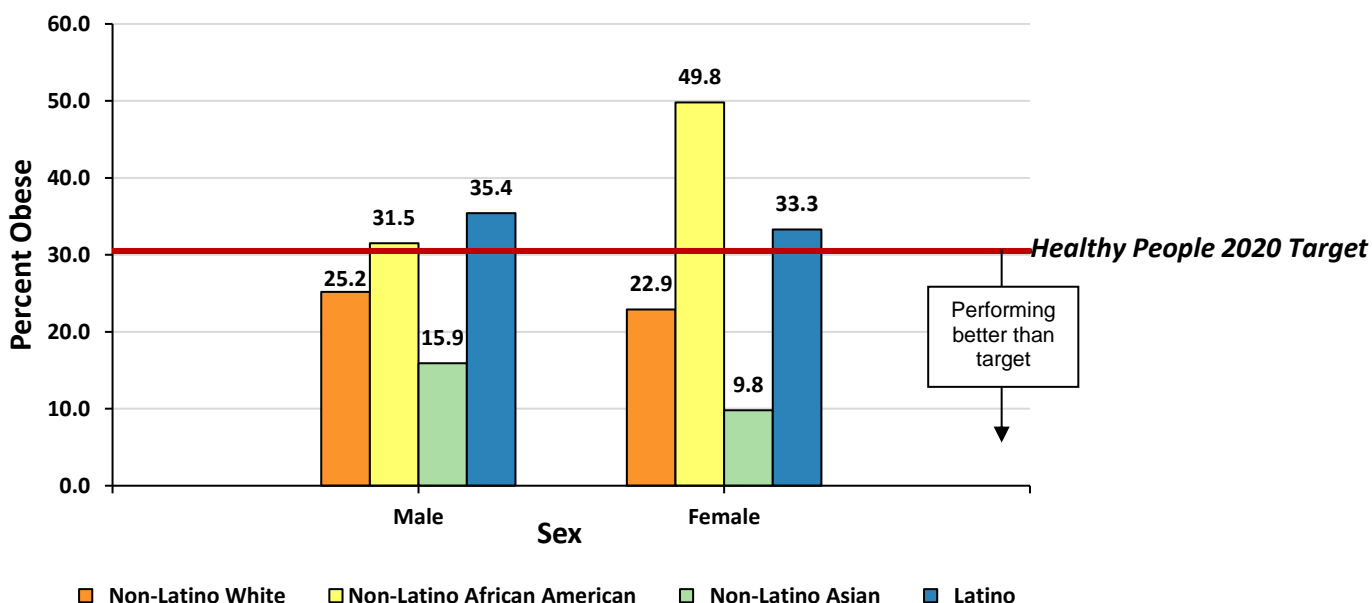


Table 10. Prevalence of Obesity Among California Adults, by Sex and Race/Ethnicity, CHIS, 2014

Race/Ethnicity	Male	Female
	Percent Obese (95% CI) ^a	Percent Obese (95% CI)
Non-Latino White	25.2% (22.0, 28.3)	22.9% (20.6, 25.3)
Non-Latino African American	31.5% (22.0, 41.0)	49.8% (39.2, 60.5)
Non-Latino Asian	15.9% (10.5, 21.2)	9.8% (5.7, 13.9)
Latino	35.4% (32.0, 38.8)	33.3% (29.8, 36.8)

Notes:

^a95% CI = 95% Confidence Interval.

Obesity Prevalence among California Adults by Socioeconomic Status

The prevalence of obesity in 2014 was higher among low-income California adults compared to those with higher incomes.⁴⁶ In fact, an inverse relationship between income and obesity existed: as household income increased in California, adult obesity rates decreased. Adults with the lowest income (0-99 percent FPL) had the highest obesity prevalence (31.4 percent), which exceeded the *Healthy People 2020* target of ≤ 30.5 percent.^{13,46} Adults in the highest income group (500 percent FPL or more) had the lowest obesity prevalence (22.5 percent).

Figure 5. Prevalence of Obesity Among California Adults, by Household Poverty Level, CHIS, 2014

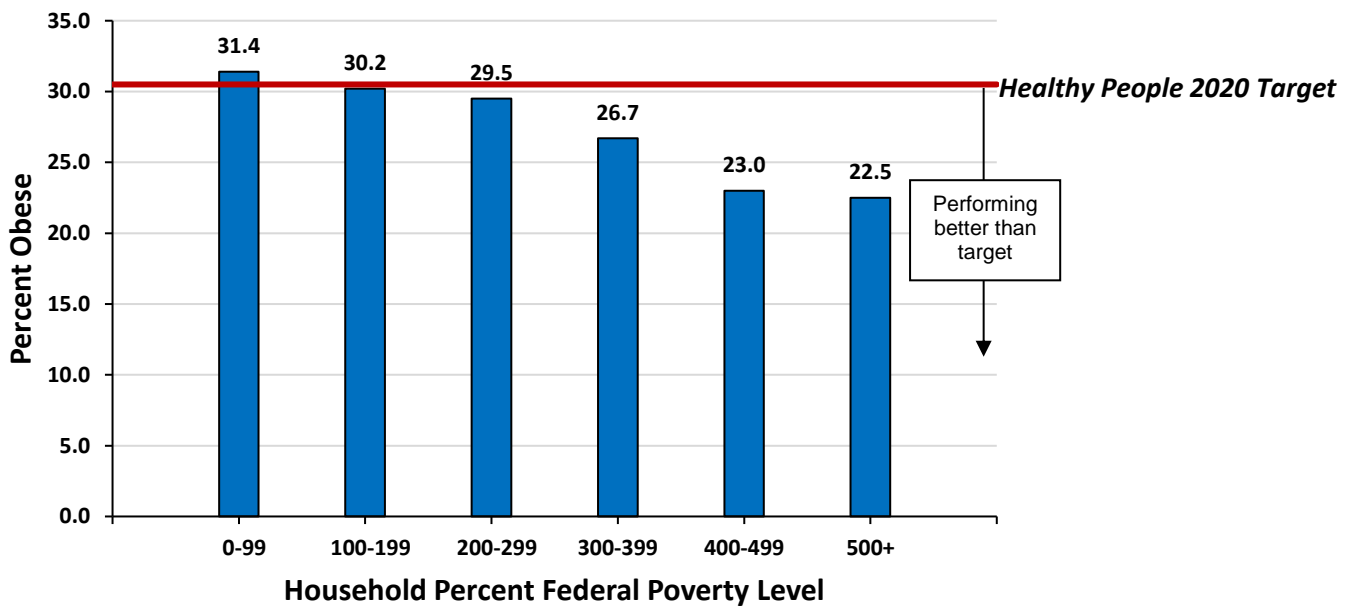


Table 11. Prevalence of Obesity Among California Adults, by Household Poverty Level, CHIS, 2014

Household Percent Federal Poverty Level	Percent Obese (95% CI) ^a
0-99	31.4% (27.2, 35.5)
100-199	30.2% (26.6, 33.8)
200-299	29.5% (25.1, 33.9)
300-399	26.7% (22.8, 30.6)
400-499	23.0% (18.6, 27.4)
500+	22.5% (20.2, 24.8)

Notes:

^a95% CI = 95% Confidence Interval.

Adolescent Obesity Prevalence and Trends

This section presents obesity prevalence rates among California adolescents. First, obesity rates are presented from the FitnessGram assessment conducted with 9th and 7th grade students in California public schools. Following the FitnessGram results, obesity rates from CHIS are presented. The strength of the FitnessGram data is that it

provides measured heights and weights for the population of California students; however, it is limited in that it only measures students in select grades. CHIS is limited in that it provides self-reported data, but its strength is that it provides estimates for a representative sample of adolescents across the 12-17 age range. While the findings from the two different methodologies cannot be compared to each other, given the differences in sampling, measurement, and time periods, each is useful for exploring trends over time. For this report, only the overall CHIS adolescent data can be viewed across time, due to small sample sizes for subgroups annually. FitnessGram only recently began to publicly report obesity and overweight data in accordance with the CDC growth chart definitions; thus, for this report, only the most recent data (school year 2014-2015) are presented.

Adolescent Obesity Prevalence from FitnessGram

Obesity rates differed for adolescents among different subgroups of sex, race/ethnicity, and socioeconomic status.

Obesity Prevalence among California 9th graders, Overall and by Sex

In the 2014-2015 school year, 17.2 percent of 9th graders in California were obese.³⁹ Obesity rates were higher for males than females (19.3 percent vs 14.8 percent).

Figure 6. Prevalence of obesity among California 9th graders in public schools, overall and by sex, FitnessGram, 2014-2015 school year.

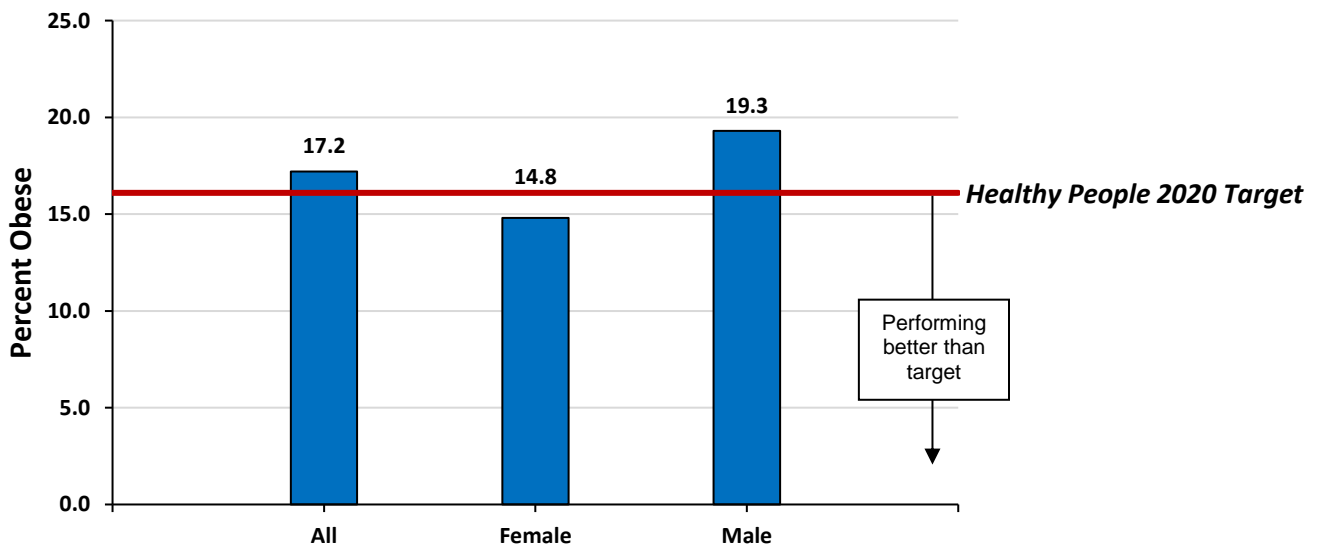


Table 12. Prevalence of obesity among California 9th graders in public schools, overall and by sex, FitnessGram, 2014-2015 school year.

	Total in FitnessGram		Obese	
	n	%	n	%
All	441,730	100.0	75,978	17.2
Female	215,044	48.7	31,827	14.8
Male	226,686	51.3	43,750	19.3

Obesity Prevalence among California 9th graders by Race/Ethnicity

The majority (52.2 percent) of 9th graders measured by FitnessGram in 2014-2015 identified as Hispanic/Latino. This group has a high rate of obesity (21.8 percent). The lowest rates of obesity were found among Non-Latino Asian and White 9th graders (7.6 percent and 11.1 percent, respectively), while the relatively small group of Native Hawaiian/Pacific Islanders had the highest obesity rates (28.8 percent).³⁹

Figure 7. Prevalence of obesity among California 9th graders in public schools, by race/ethnicity, FitnessGram, 2014-2015 school year.

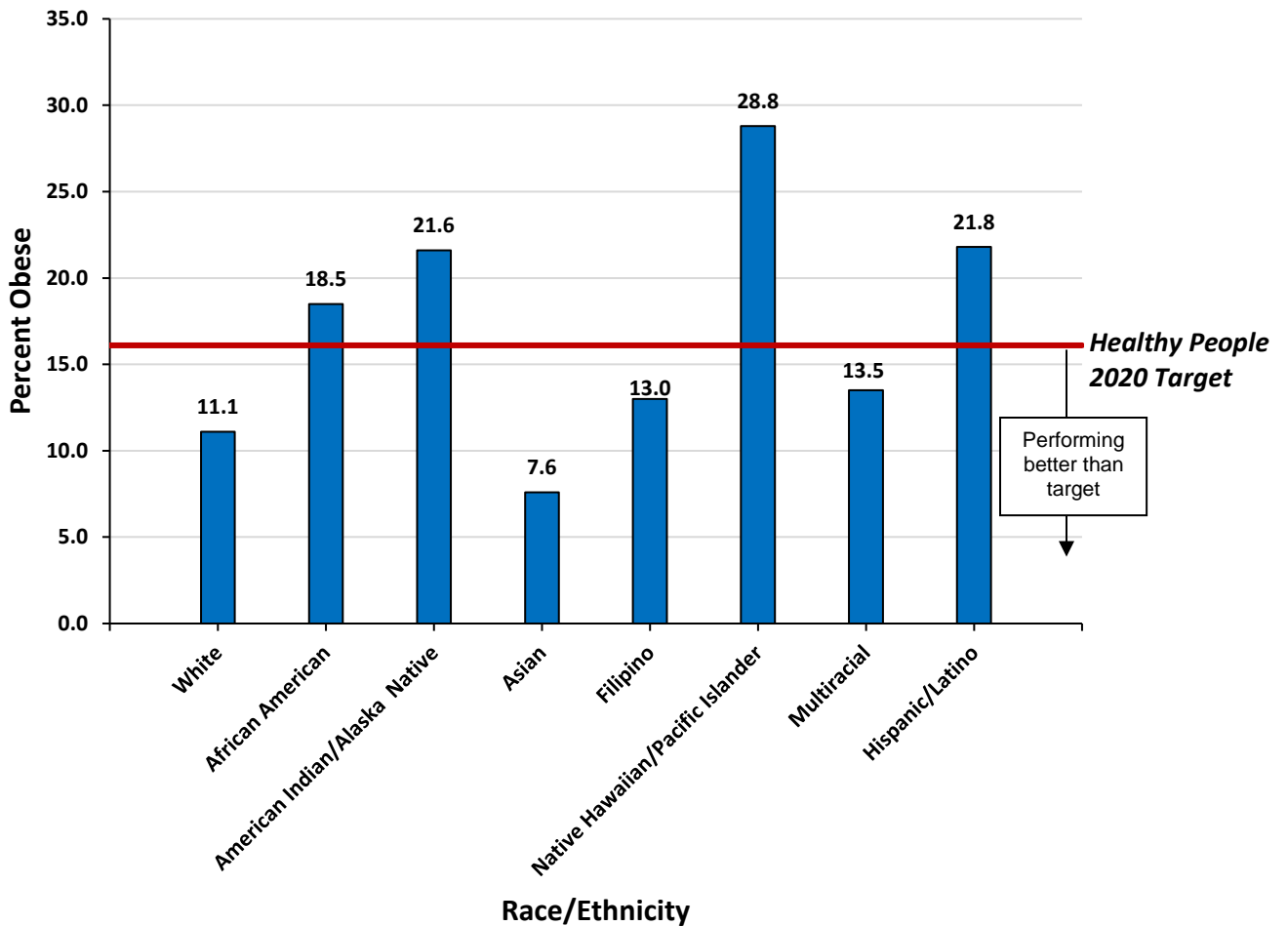


Table 13. Prevalence of obesity among California 9th graders in public schools, by race/ethnicity, FitnessGram, 2014-2015 school year.

Race/Ethnicity	Total in FitnessGram		Obese	
	n	%	n	%
White	109,372	24.8	12,140	11.1
African American	25,763	5.8	4,766	18.5
American Indian/Alaska Native	4,425	1.0	956	21.6
Asian	41,332	9.4	3,141	7.6
Filipino	12,767	2.9	1,660	13.0
Native Hawaiian/Pacific Islander	2,261	0.5	651	28.8
Multiracial	2,261	0.5	2,037	13.5
Hispanic/Latino	230,720	52.2	50,297	21.8

Obesity Prevalence among California 9th graders by Socioeconomic Status

Most (56.2 percent) 9th grade students in California public schools in 2014-15 were considered economically disadvantaged. Ninth graders from economically disadvantaged households had almost double the rate of obesity (21.4 percent) compared to students from more advantaged households (11.1 percent).³⁹

Figure 8. Prevalence of obesity among California 9th graders in public schools, by socioeconomic status, FitnessGram, 2014-2015 school year.

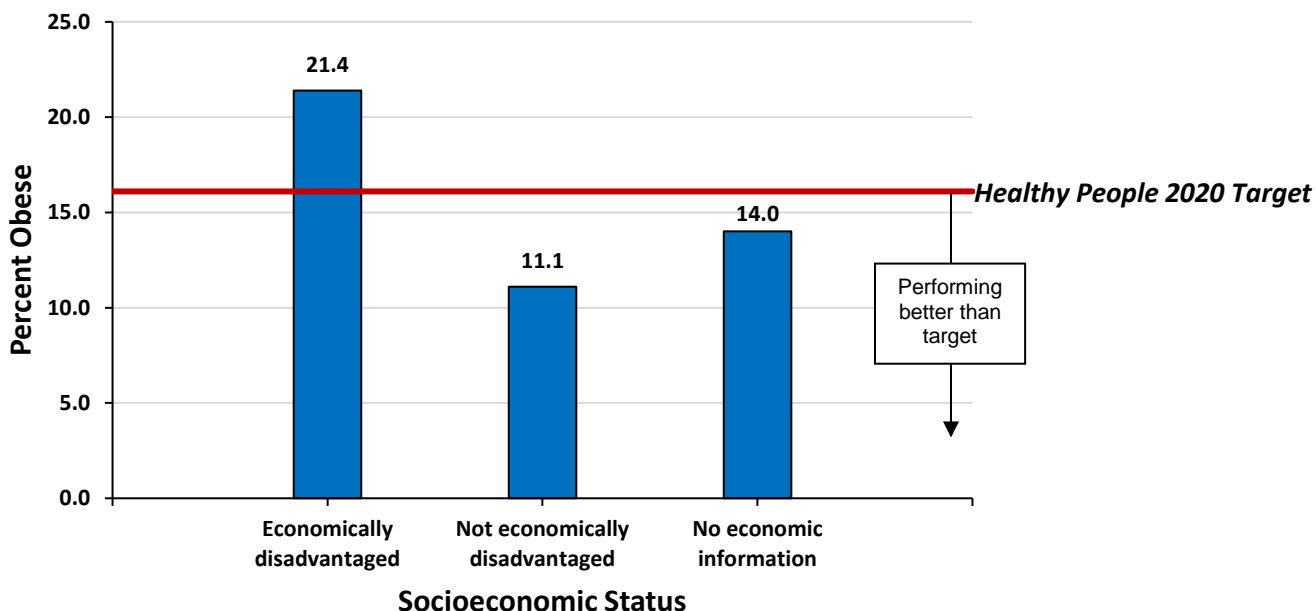


Table 14. Prevalence of obesity among California 9th graders in public schools, by socioeconomic status, FitnessGram, 2014-2015 school year

Socioeconomic Status	Total in FitnessGram		Obese	
	n	%	n	%
Economically disadvantaged	248,049	56.2	53,082	21.4
Not economically disadvantaged	156,706	35.5	17,394	11.1
No economic information	36,973	8.4	5,176	14.0

Obesity Prevalence among California 7th graders, Overall and by Sex

In the 2014-2015 school year, FitnessGram results showed that 19.1 percent of 7th graders in California were obese.³⁹ As with 9th grade students, males had a higher obesity prevalence (20.9 percent) than females (17.3 percent).

Figure 9. Prevalence of obesity among California 7th graders in public schools, overall and by sex, FitnessGram, 2014-2015 school year.

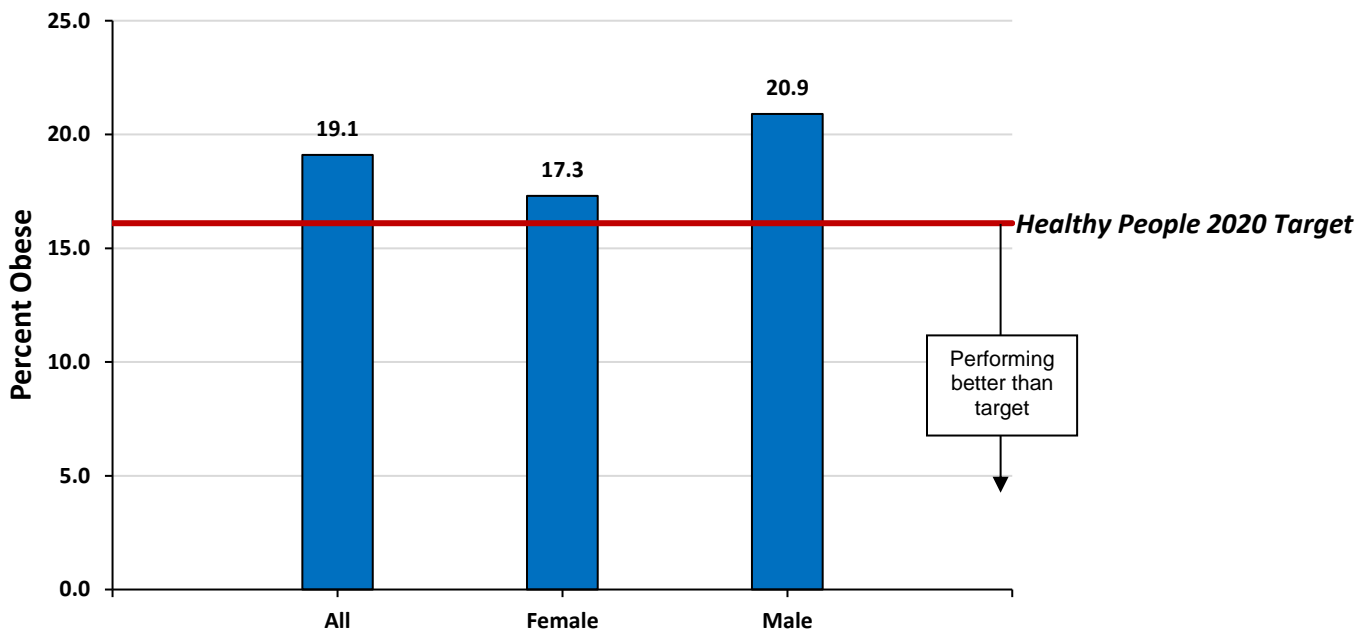


Table 15. Prevalence of obesity among California 7th graders in public schools, overall and by sex, FitnessGram, 2014-2015 school year.

	Total in FitnessGram		Obese	
	n	%	n	%
All	439,476	100.0	83,940	19.1
Female	214,778	48.9	37,157	17.3
Male	224,698	51.1	46,962	20.9

Obesity Prevalence among California 7th graders by Race/Ethnicity

Most (52.4 percent) 7th grade students in California public schools in 2014-15 identified as Hispanic/Latino. Obesity rates were high among this group (24.8 percent). Asian and White 7th graders had the lowest rates of obesity (8.1 percent and 11.7 percent, respectively), while the relatively small group of Native Hawaiian/Pacific Islanders had the highest (30.4 percent).³⁹

Figure 10. Prevalence of obesity among California 7th graders in public schools, by race/ethnicity, FitnessGram, 2014-2015 school year.

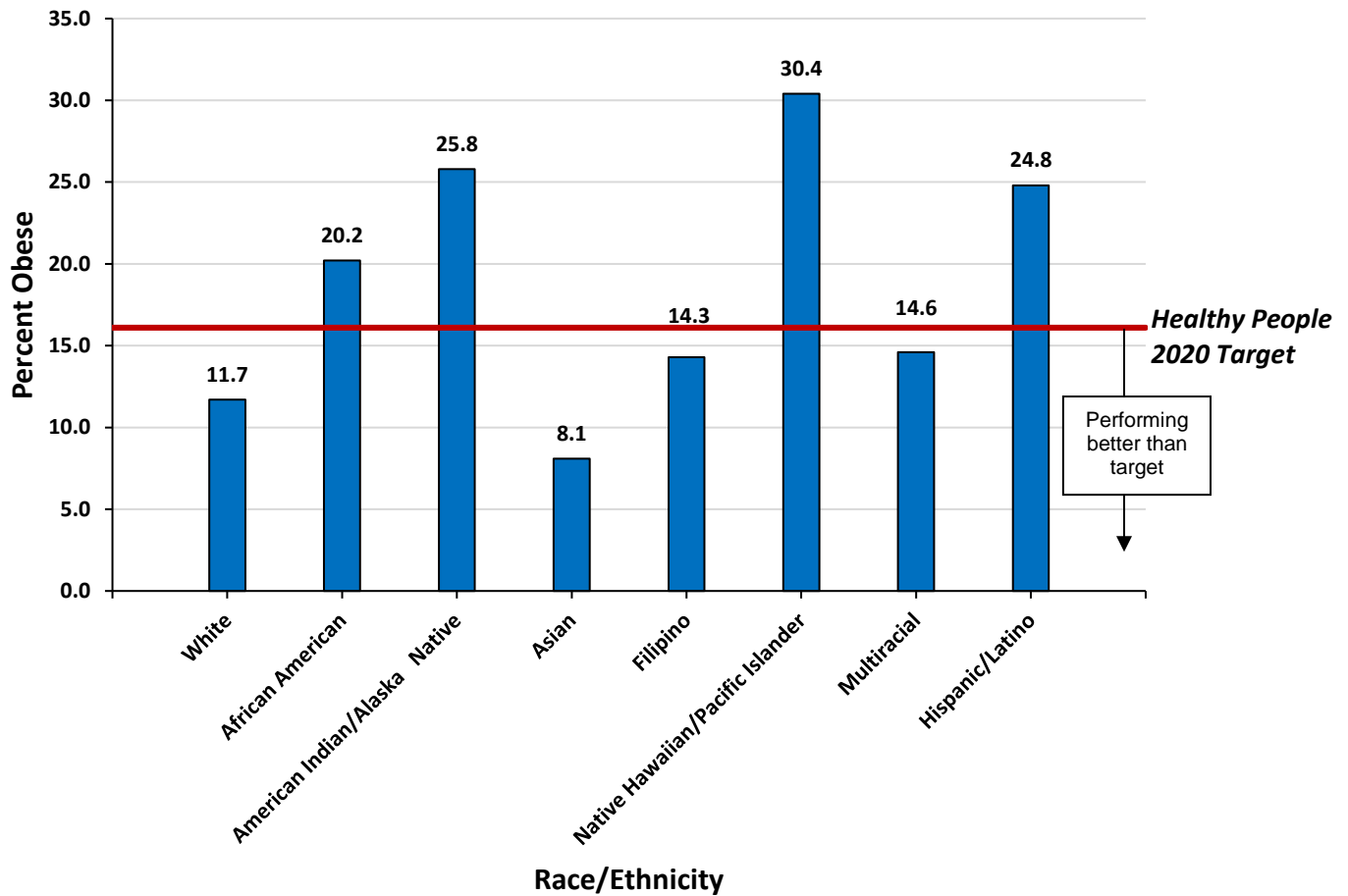


Table 16. Prevalence of obesity among California 7th graders in public schools, by race/ethnicity, FitnessGram, 2014-2015 school year.

Race/Ethnicity	Total in FitnessGram		Obese	
	n	%	n	%
White	107,185	24.4	12,541	11.7
African American	26,064	5.9	5,265	20.2
American Indian/Alaska Native	5,225	1.2	1,348	25.8
Asian	40,298	9.2	3,264	8.1
Filipino	11,980	2.7	1,713	14.3
Native Hawaiian/Pacific Islander	2,254	0.5	685	30.4
Multiracial	16,148	3.7	2,358	14.6
Hispanic/Latino	230,322	52.4	57,120	24.8

Obesity Prevalence among California 7th graders by Socioeconomic Status

Most (58.7 percent) 7th grade students in California's public schools in 2014-2015 were economically disadvantaged. The prevalence of obesity among economically disadvantaged 7th grade students (23.9 percent) was more than double the rate among students from more advantaged households (11.9 percent).³⁹

Figure 11. Prevalence of obesity among California 7th graders in public schools, by socioeconomic status, FitnessGram, 2014-2015 school year.

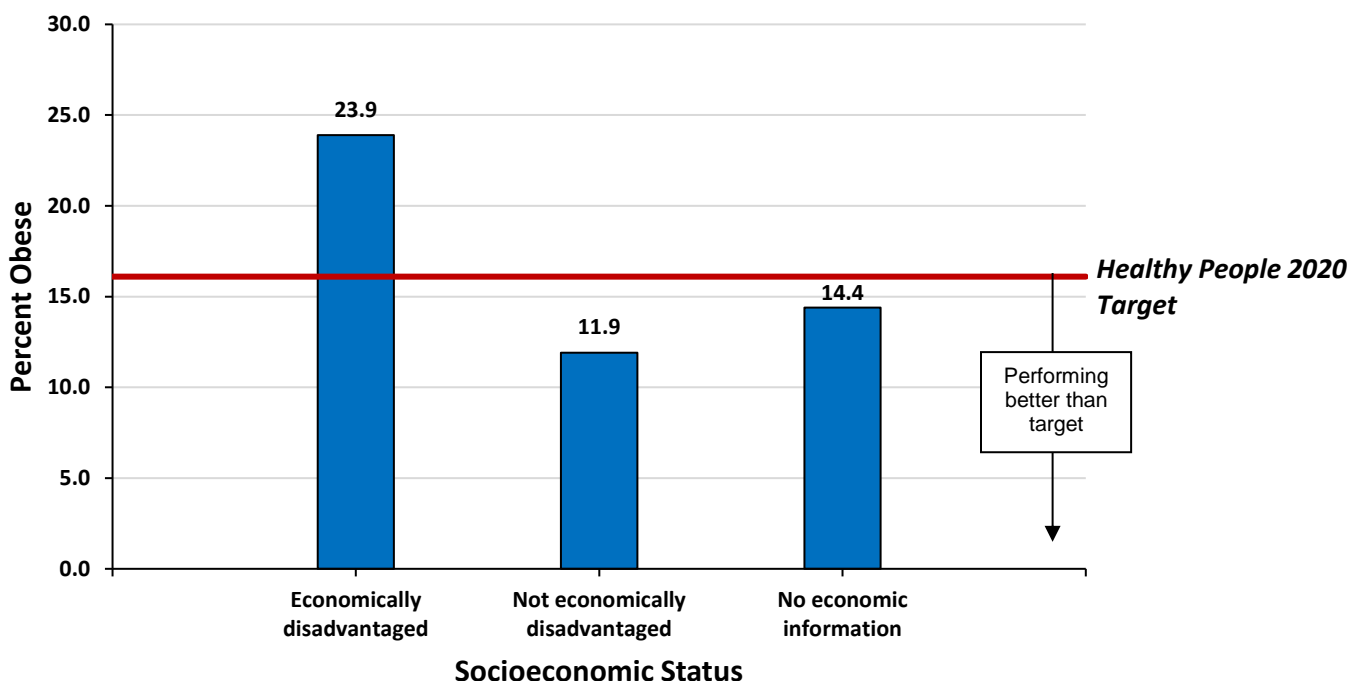


Table 17. Prevalence of obesity among California 7th graders in public schools, by socioeconomic status, FitnessGram, 2014-2015 school year.

Socioeconomic Status	Total in FitnessGram		Obese	
	n	%	n	%
Economically disadvantaged	258,165	58.7	61,701	23.9
Not economically disadvantaged	146,088	33.2	17,384	11.9
No economic information	35,223	8.0	5,072	14.4

Adolescent Obesity Prevalence from CHIS

In 2014, CHIS found the overall prevalence of obesity among California adolescents ages 12-17 to be 14.6 percent (representing approximately 445,000 obese adolescents), below the *Healthy People 2020* target for adolescents (≤ 16.1 percent).^{13,46} Since 2011, obesity among California adolescents has decreased slightly (from 15.3 percent to 14.6 percent).⁵³

Note: the measured obesity rates from FitnessGram appear to suggest a slightly higher obesity rate for California adolescents than the reported obesity rates from CHIS, although the FitnessGram result falls within the 95 percent confidence interval of the CHIS estimate. The estimates from the different datasets cannot be compared to one another, so must be considered separately.

Figure 12. Prevalence of Obesity Among California Adolescents, CHIS, 2011-2014

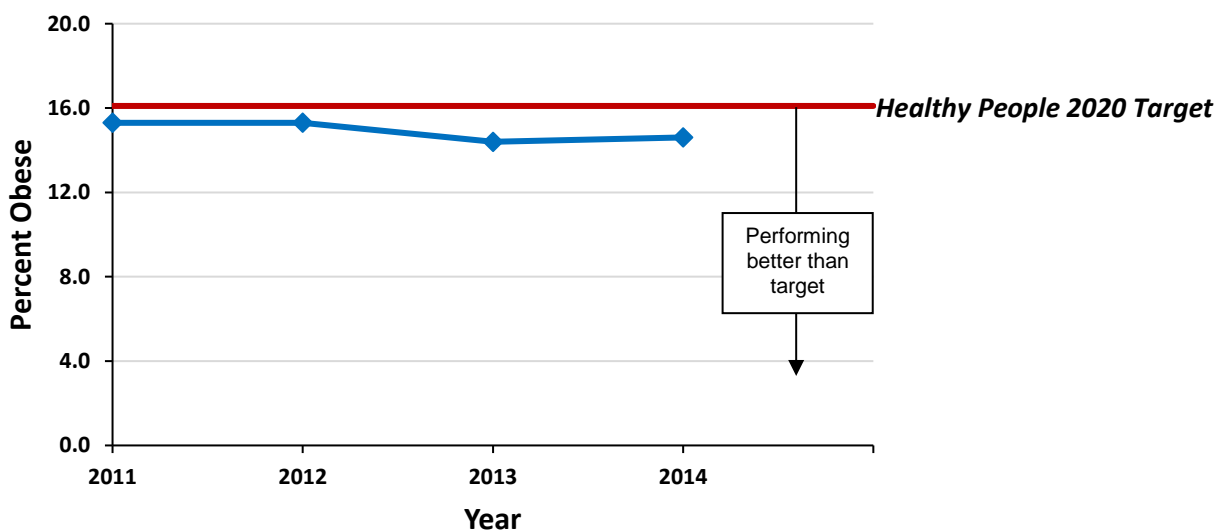


Table 18. Prevalence of Obesity Among California Adolescents, CHIS, 2011-2014

Year	Percent Obese (95% CI) ^a
2011	15.3% (12.7, 17.9)
2012	15.3% (12.3, 18.4)
2013	14.4% (11.1, 17.8)
2014	14.6% (11.7, 17.6)

Notes:

^a95% CI = 95% Confidence Interval.

CHIS Adolescent obesity rates by age, sex, race/ethnicity, and socioeconomic status

Due to small sample sizes in each year, CHIS data from 2011 through 2014 were pooled to obtain stable estimates for the adolescent obesity prevalence rates by age, sex, race/ethnicity, and socioeconomic status, as presented below.

Obesity Prevalence among California Adolescents by Age Group

In 2011-2014, CHIS found prevalence rates of obesity among both adolescents 12 to 14 years old (15.5 percent) and those 15 to 17 years (14.4 percent) to be lower than the *Healthy People 2020* target of ≤ 16.1 percent.^{13,53}

Figure 13. Prevalence of Obesity Among Adolescents in California, by Age, CHIS, 2011-2014 (pooled)

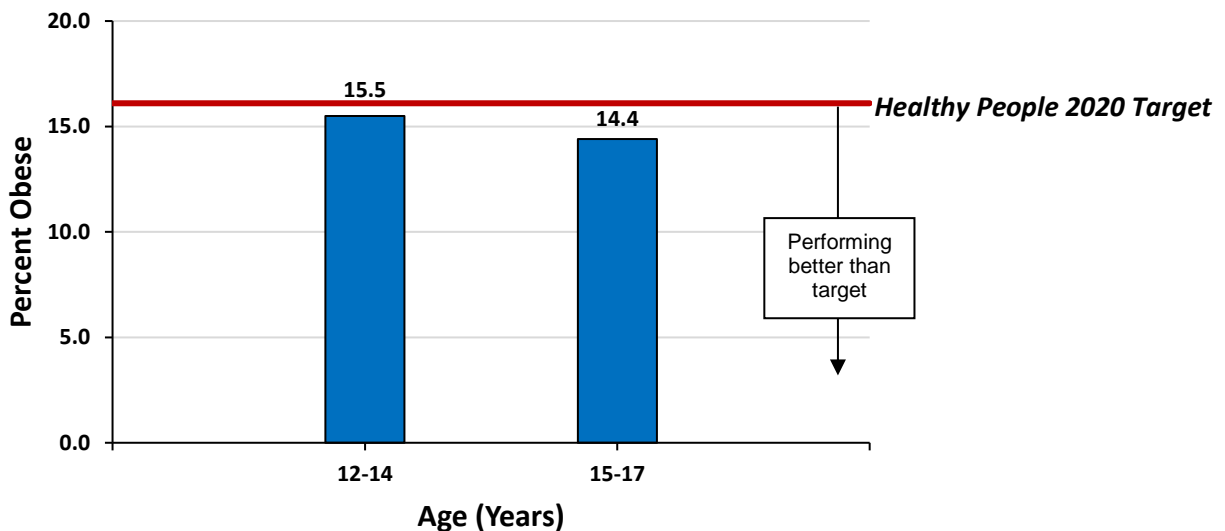


Table 19. Prevalence of Obesity Among California Adolescents, by Age, CHIS, 2011-2014 (pooled)

Age (years)	Percent Obese (95% CI) ^a
12-14	15.5% (13.4, 17.6)
15-17	14.4% (12.4, 16.5)

Notes:

^a95% CI = 95% Confidence Interval.

Obesity Prevalence among California Adolescents by Sex

According to the CHIS data from 2011-2014, there was a wide disparity in adolescent obesity rates among males and females, with the rate for males being more than 50 percent higher than the rate for females.⁵³ The prevalence of obesity among adolescent females in California (11.5 percent) was below the *Healthy People 2020* obesity target, but the rate of obesity among adolescent males (18.2 percent) exceeded the target.^{13,53}

Figure 14. Prevalence of Obesity Among California Adolescents, by Sex, CHIS, 2011-2014 (pooled)

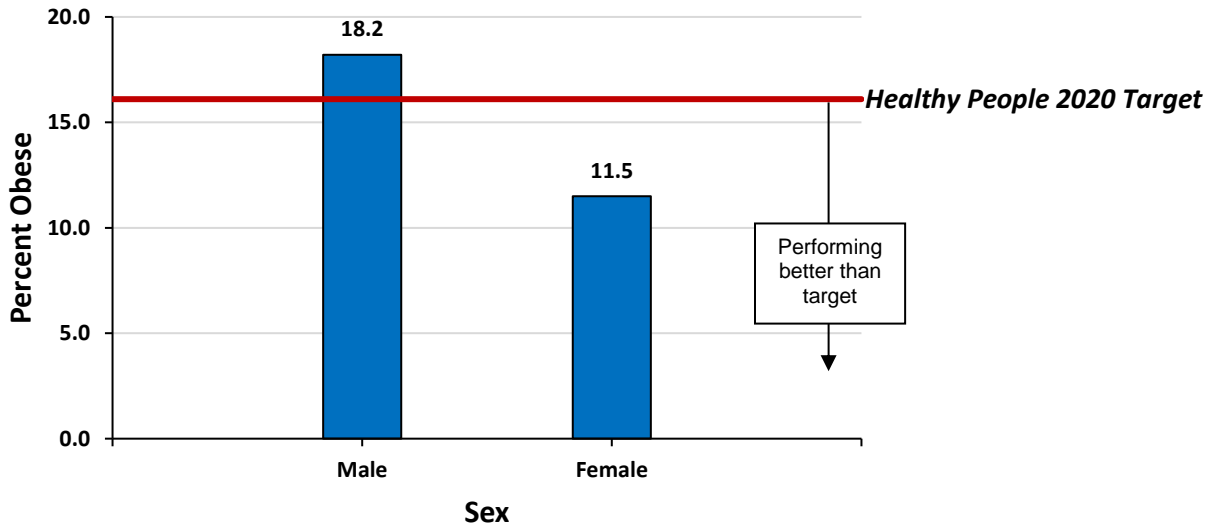


Table 20. Prevalence of Obesity Among California Adolescents, by Sex, CHIS, 2011-2014 (pooled)

Sex	Percent Obese (95% CI) ^a
Male	18.2% (15.9, 20.5)
Female	11.5% (9.6, 13.4)

Notes:

^a95% CI = 95% Confidence Interval.

Obesity Prevalence among California Adolescents by Race/Ethnicity

CHIS found large disparities in adolescent obesity rates among adolescents from different ethnic groups. The prevalence of obesity among African American (22.5 percent) and Latino (20.2 percent) adolescents in 2011-2014 was more than 388 percent the rate for non-Latino Asian students (5.2 percent) and more than double the rate of non-Latino White students (9.2 percent).⁵³ While the rates for African American and Latino adolescents did not meet the Healthy People 2020 targets, the rates for Whites and Asians fell well below the target.

Figure 15. Prevalence of Obesity Among California Adolescents, by Race/Ethnicity, CHIS, 2011-2014 (pooled)

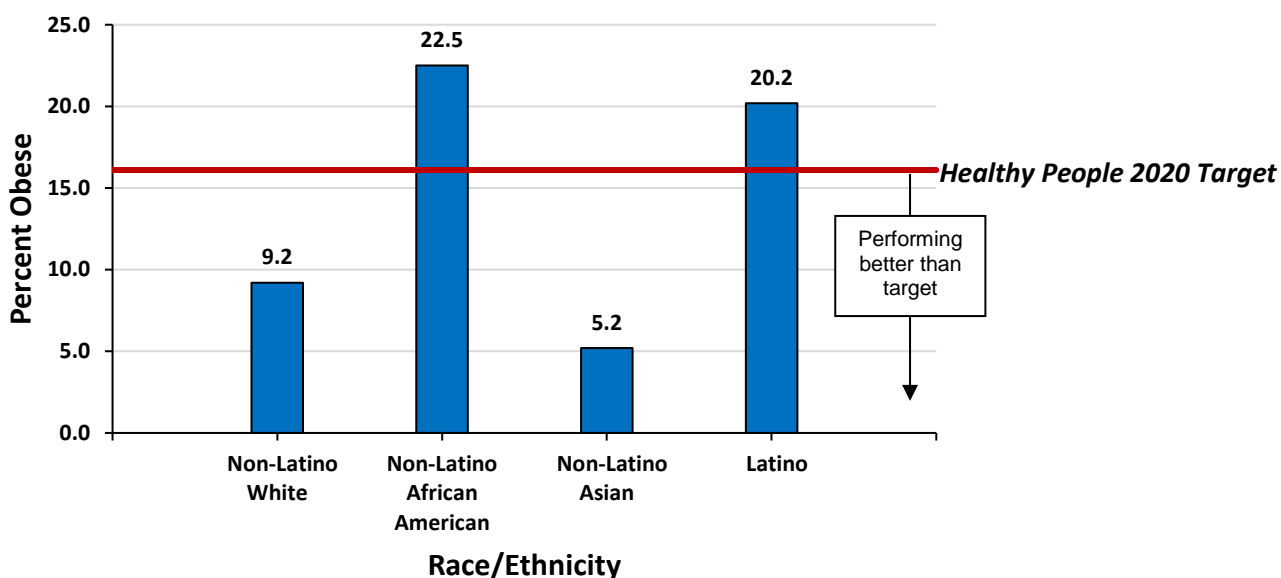


Table 21. Prevalence of Obesity Among California Adolescents, by Race/Ethnicity, CHIS, 2011-2014 (pooled)

Race/Ethnicity	Percent Obese (95% CI) ^a
Non-Latino White	9.2% (7.2, 11.2)
Non-Latino African American	22.5% (14.4, 30.6)
Non-Latino Asian	5.2% (2.5, 7.9)
Latino	20.2% (17.8, 22.6)

Notes:

^a95% CI = 95% Confidence Interval.

Obesity Prevalence among Adolescents by Socioeconomic Status

The CHIS data from 2011-2014 found that the prevalence of obesity was highest (20.4 percent) among the most impoverished adolescents (those living in households with incomes 0-99 percent FPL) and lowest for those from households with incomes at or above 500 percent FPL (7.3 percent).⁵³ The rates of obesity among adolescents from households with income below 300 percent FPL all exceeded the Healthy People 2020 target.

Figure 16. Prevalence of Obesity Among California Adolescents, by Household Poverty Level, CHIS, 2011-2014 (pooled)

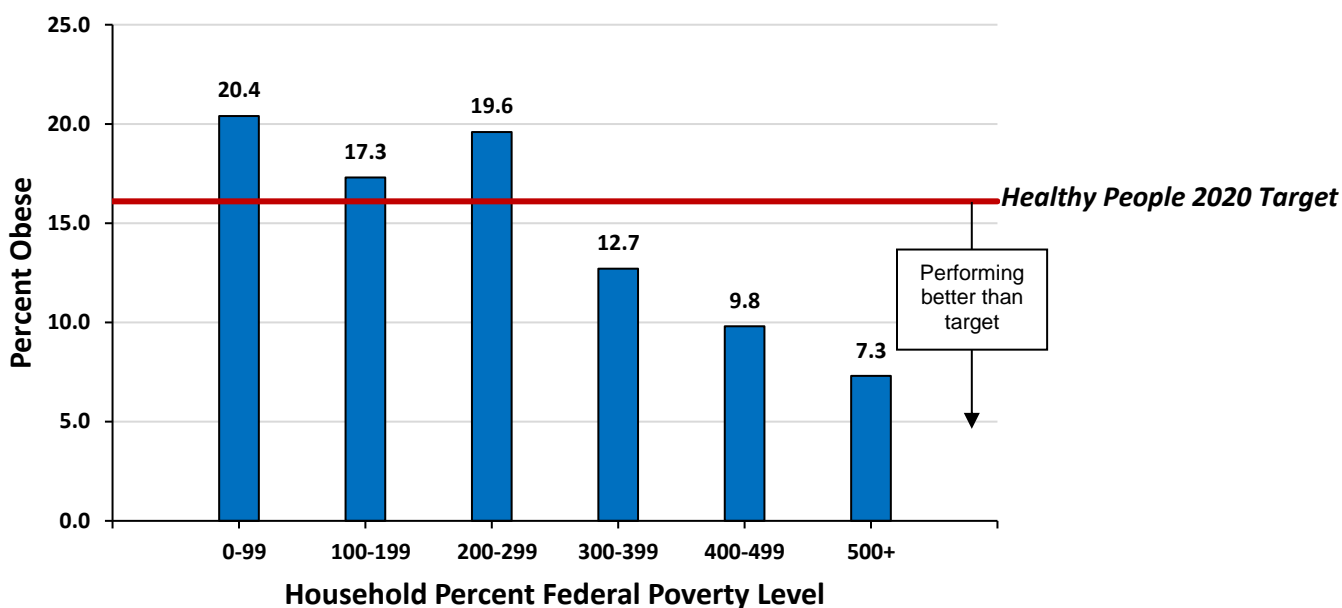


Table 22. Prevalence of Obesity Among California Adolescents, by Household Poverty Level, CHIS, 2011-2014 (pooled)

Household Percent Federal Poverty Level	Percent Obese (95% CI) ^a
0-99	20.4% (17.2, 23.7)
100-199	17.3% (14.0, 20.5)
200-299	19.6% (13.7, 25.4)
300-399	12.7% (8.8, 16.6)
400-499	9.8% (6.2, 13.3)
500+	7.3% (5.4, 9.3)

Notes:

^a95% CI = 95% Confidence Interval.

Child Obesity Prevalence and Trends

The next section presents obesity prevalence rates among California children. First, obesity rates are presented from the FitnessGram assessment, conducted among 5th

grade students in California public schools. Following the FitnessGram results, overweight-for-age prevalence rates from CHIS are presented. The strength of the FitnessGram data is that it provides measured heights and weights for the population of 5th grade California students; however, it is limited in that it only measures students in one grade. CHIS is limited in that it provides only self-reported weight data for a sample of children, and does not include height data; thus, BMI cannot be computed and only weight-for-age is available. While the weight status measure provided by CHIS is quite limited, the strength of CHIS is that it provides estimates for a representative sample of children across the entire 2-11 year age range. While the findings from the two different methodologies cannot be compared to each other, given the differences in sampling, measurement, and time periods, each is useful for exploring trends over time. For this report, only the overall CHIS child overweight-for-age data can be viewed across time, due to small sample sizes for subgroups annually. FitnessGram only recently began to publicly report obesity and overweight data in accordance with the CDC growth chart definitions; thus, for this report only the most recent data (school year 2014-2015) is presented.

Child Obesity Prevalence from FitnessGram

Obesity Prevalence among California 5th graders, Overall and by Sex

In the 2014-2015 school year, 20.9 percent of 5th graders in California were obese.³⁹ Boys had a higher obesity prevalence than girls (23.8 percent and 18.1 percent, respectively).

Figure 17. Prevalence of obesity among California 5th graders in public schools, overall and by sex, FitnessGram, 2014-2015 school year.

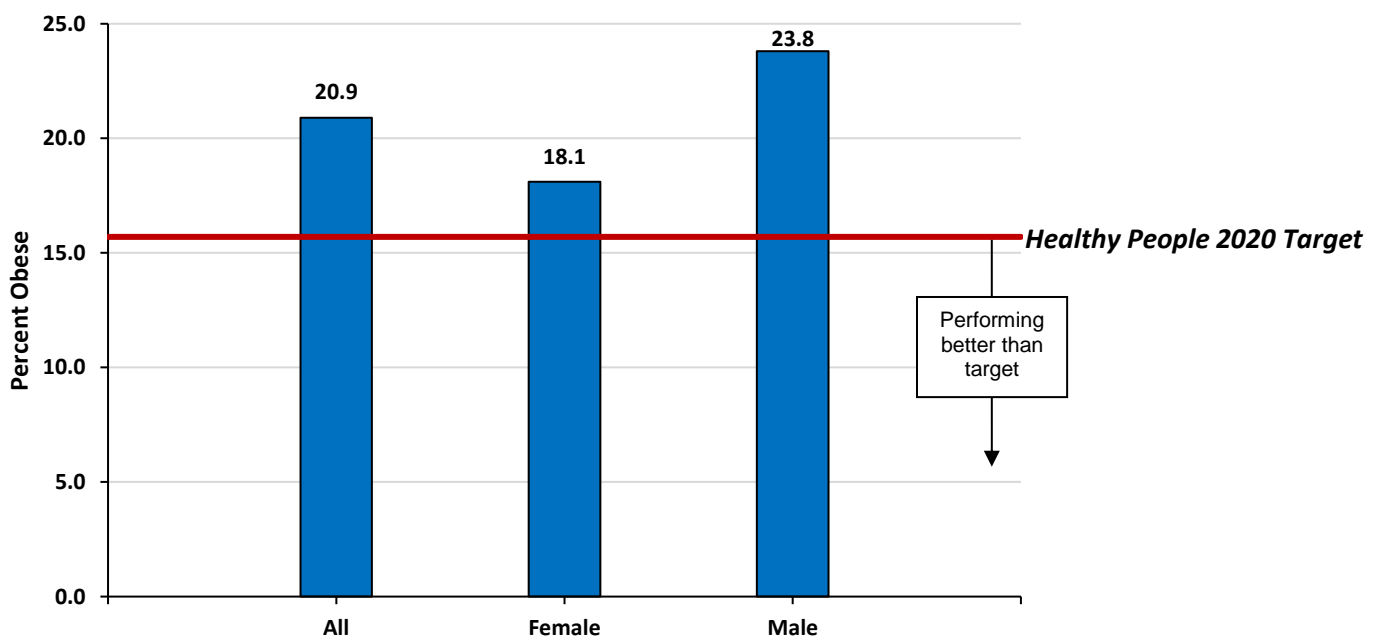


Table 23. Prevalence of obesity among California 5th graders in public schools, overall and by sex, FitnessGram, 2014-2015 school year.

	Total in FitnessGram		Obese	
	n	%	n	%
All	455,897	100.0	95,282	20.9
Female	222,627	48.8	40,295	18.1
Male	233,270	51.2	55,518	23.8

Obesity Prevalence among California 5th graders by Race/Ethnicity

Most California 5th grade students in 2014-15 identified as Hispanic/Latino. This group had high rates of obesity (27.4 percent). Asian and White 5th graders had the lowest rates of obesity (10.1 percent and 12.0 percent, respectively); while the relatively small group of Native Hawaiian/Pacific Islanders had the highest rates (34.2 percent).³⁹

Figure 18. Prevalence of obesity among California 5th graders in public schools, by race/ethnicity, FitnessGram, 2014-2015 school year.

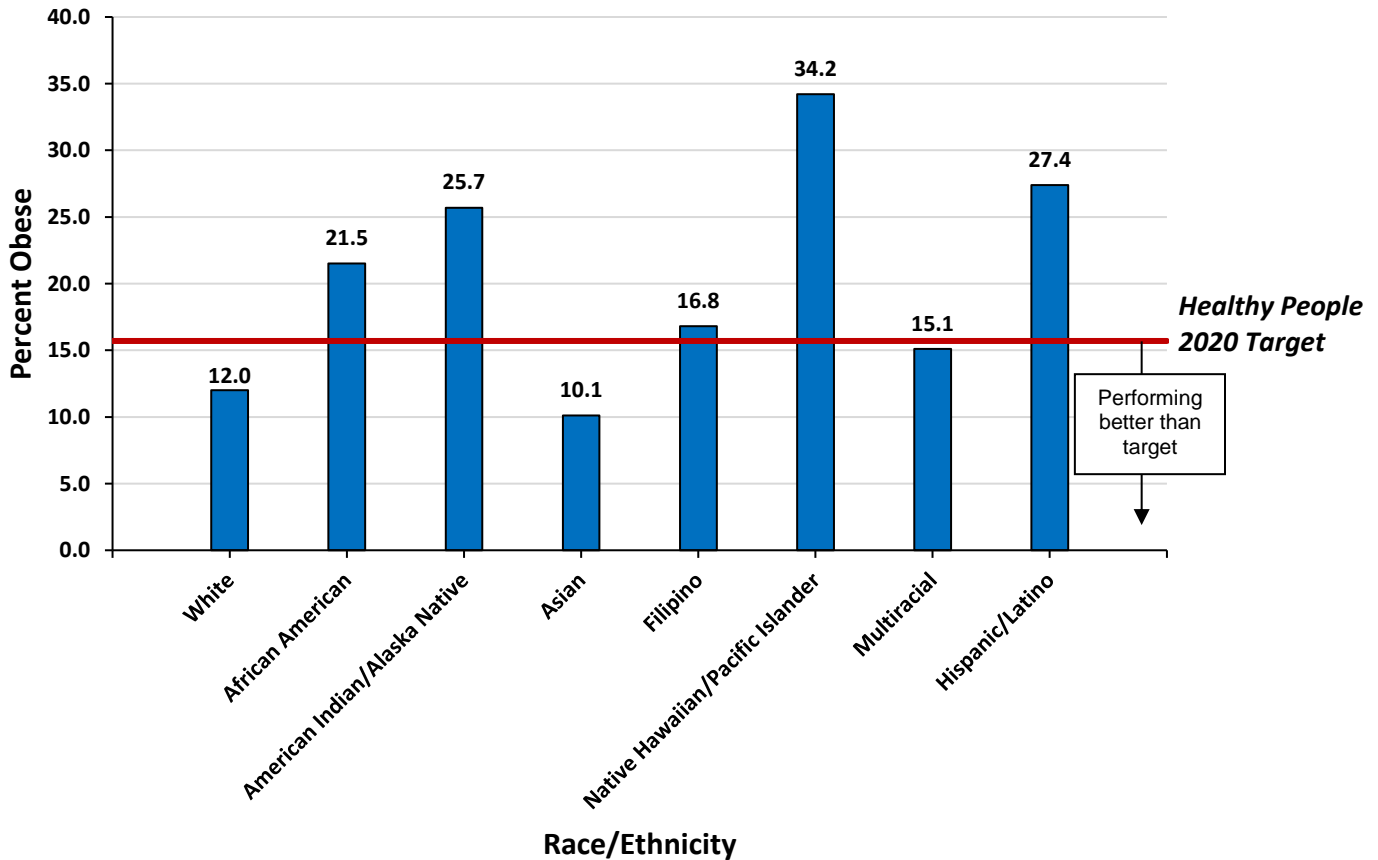


Table 24. Prevalence of obesity among California 5th graders in public schools, by race/ethnicity, FitnessGram, 2014-2015 school year.

Race/Ethnicity	Total in FitnessGram		Obese	
	n	%	n	%
White	111,346	24.4	13,362	12.0
African American	26,377	5.8	5,671	21.5
American Indian/Alaska Native	5,177	1.1	1,330	25.7
Asian	42,059	9.2	4,248	10.1
Filipino	11,206	2.5	1,883	16.8
Native Hawaiian/Pacific Islander	2,339	0.5	800	34.2
Multiracial	18,511	4.1	2,795	15.1
Hispanic/Latino	238,882	52.4	65,454	27.4

Obesity Prevalence among California 5th graders by Socioeconomic Status

Most (59.6 percent) 5th grade students in California public schools in 2014-15 were from economically disadvantaged households. The prevalence of obesity among 5th graders from economically disadvantaged households (26.4 percent) was more than double the rate of students from more advantaged households (12.6 percent).³⁹

Figure 19. Prevalence of obesity among California 5th graders in public schools, by socioeconomic status, FitnessGram, 2014-2015 school year.

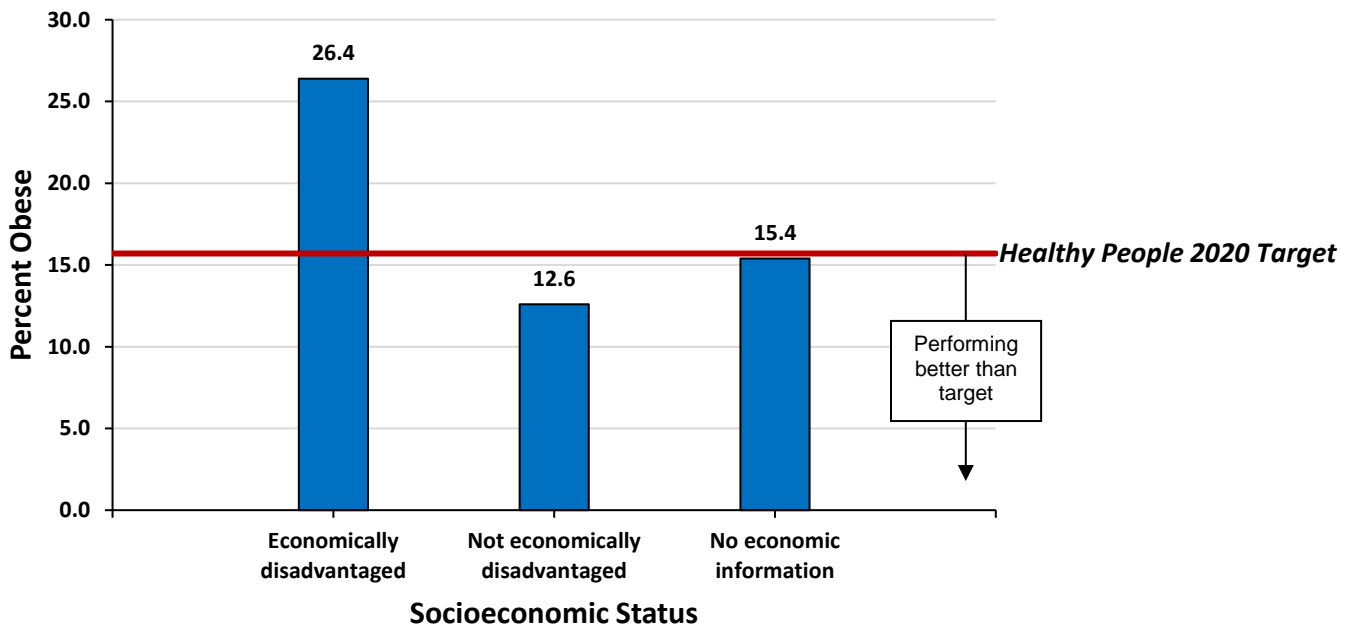


Table 25. Prevalence of obesity among California 5th graders in public schools, by socioeconomic status, FitnessGram, 2014-2015 school year.

Socioeconomic Status	Total in FitnessGram		Obese	
	n	%	n	%
Economically disadvantaged	271,614	59.6	71,706	26.4
Not economically disadvantaged	149,724	32.8	18,865	12.6
No economic information	34,461	7.6	5,307	15.4

Child Overweight-for-Age Prevalence from CHIS

The CHIS overweight-for-age measure is very limited, as it simply describes whether a child is heavy for his or her age, without taking the child’s height into consideration. However, these data are still useful for examining trends over time. In 2014, CHIS found that 15.0 percent of California children 2 to 11 years, numbering approximately 708,000 children, were overweight-for-age.⁴⁶ Overweight-for-age decreased slightly from 2011 to 2013, but increased from 2013 to 2014.⁵³ Overweight-for-age estimates cannot be compared to *Healthy People 2020* targets, because those targets are based upon BMI measures, which consider weight in relation to height.

Figure 20. Prevalence of Overweight-for-age Among California Children, CHIS, 2011-2014

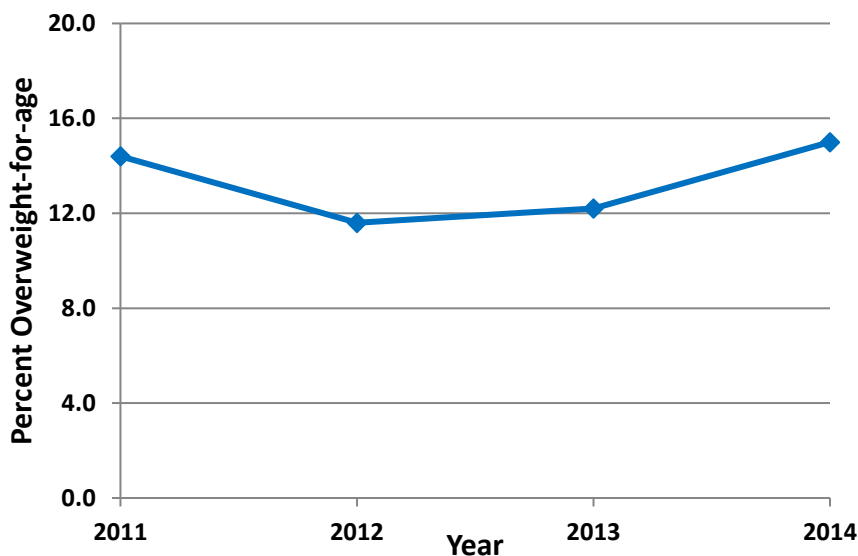


Table 26. Prevalence of Overweight-for-age Among California Children, CHIS, 2011-2014

Year	Percent Overweight-for-age (95% CI) ^a
2011	14.4% (12.0, 16.8)
2012	11.6% (9.5, 13.7)
2013	12.2% (9.6, 14.8)
2014	15.0% (11.7, 18.3)

Notes:

^a95% CI = 95% Confidence Interval.

CHIS Adolescent obesity rates by age, sex, race/ethnicity, and socioeconomic status

Due to small sample sizes in each year, CHIS data from 2011 through 2014 were pooled to obtain stable estimates for the child overweight-for-age prevalence rates by age, sex, race/ethnicity, and socioeconomic status, as presented below.

Overweight-for-Age Prevalence among California Children by Age Group

In 2011-2014, the prevalence of overweight-for-age among children was similar for young children 2-5 years and older children 6-11 years; 12.4 and 13.9 percent respectively.⁵³

Figure 21. Prevalence of Overweight-for-age Among Children in California, by Age, CHIS, 2011-2014 (pooled)

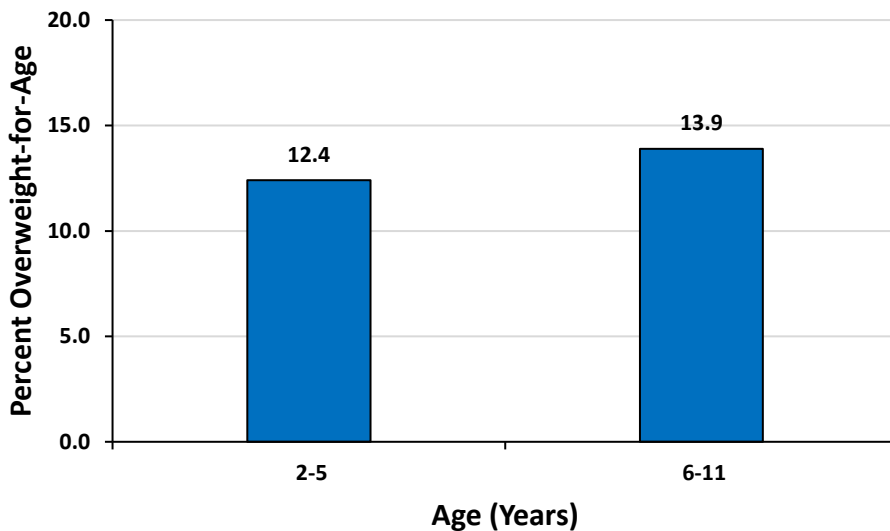


Table 27. Prevalence of Overweight-for-age Among California Children, by Age, CHIS, 2011-2014 (pooled)

Age (Years)	Percent Overweight-for-age (95% CI) ^a
2-5	12.4% (10.3, 14.6)
6-11	13.9% (12.2, 15.6)

Notes:

^a95% CI = 95% Confidence Interval.

Overweight-for-age Prevalence among California Children by Sex

In 2011-2014, the prevalence of overweight-for-age was 14.9 percent of boys and 11.6 percent for girls.⁵³

Figure 22. Prevalence of Overweight-for-age Among Children in California, by Sex, CHIS, 2011-2014 (pooled)

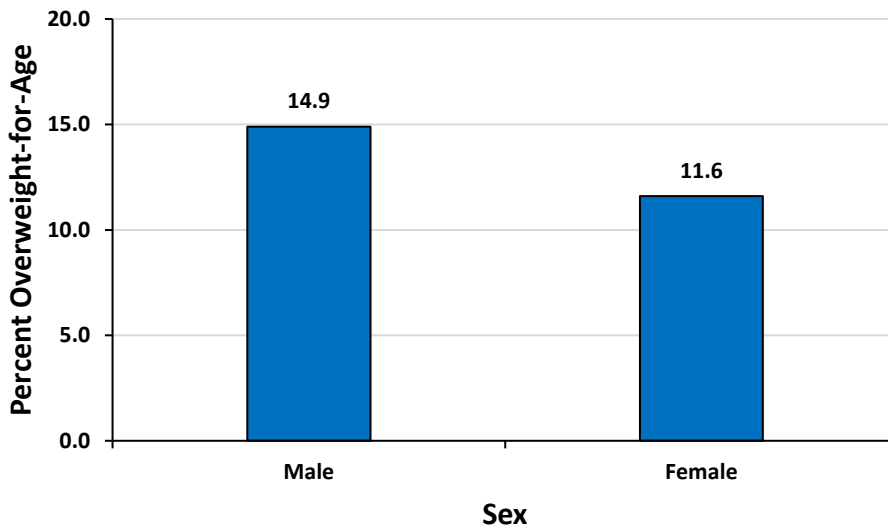


Table 28. Prevalence of Overweight-for-age Among California Children, by Sex, CHIS, 2011-2014 (pooled)

Sex	Percent Overweight-for-age (95% CI) ^a
Male	14.9% (13.0, 16.9)
Female	11.6% (9.7, 13.5)

Notes:

^a95% CI = 95% Confidence Interval.

Overweight-for-Age Prevalence among California Children by Race/Ethnicity

In 2011-2014, the prevalence of overweight-for-age among California children was higher among African Americans (19.7 percent) and Latinos (16.2 percent) than among Whites (8.5 percent).⁵³ Estimates are not reported for Non-Latino Asian children as sample sizes were too small to calculate a statistically stable estimate for this group.

Figure 23. Prevalence of Overweight-for-age Among California Children, by Race/Ethnicity, CHIS, 2011-2014 (pooled)

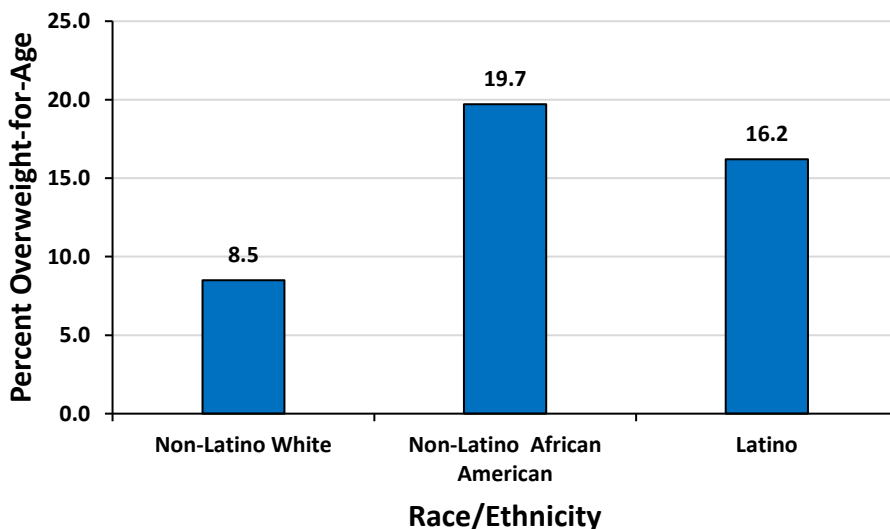


Table 29. Prevalence of Overweight-for-age Among California Children, by Race/Ethnicity, CHIS, 2011-2014 (pooled)

Race/Ethnicity	Percent Overweight-for-age (95% CI) ^a
Non-Latino White	8.5% (6.8, 10.3)
Non-Latino African American	19.7% (13.0, 26.4)
Non-Latino Asian	N/A ^b
Latino	16.2% (14.2, 18.2)

Notes:

^a95% CI = 95% Confidence Interval.

^bStatistically unstable

Overweight-for-age Prevalence among California Children by Socioeconomic Status

For the period 2011-2014, the prevalence rates of obesity for children aged 2-11 years increased as household income decreased. Obesity prevalence was 19.0 percent among children from the lowest income households compared with 7.8 percent among those from highest income households.⁵³

Figure 24. Prevalence of Overweight-for-age Among California Children, by Household Poverty Level, CHIS, 2011-2014 (pooled)

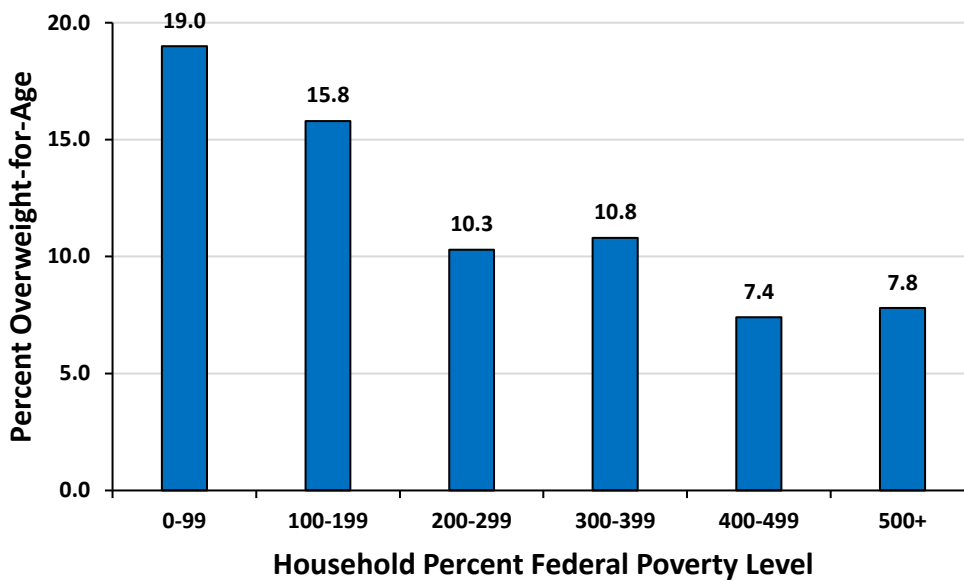


Table 30. Prevalence of Overweight-for-Age Among California Children, by Household Poverty Level, CHIS, 2011-2014 (pooled)

Household Percent Federal Poverty Level	Percent Overweight-for-age (95% CI) ^a
0-99	19.0% (15.7, 22.4)
100-199	15.8% (13.0, 18.7)
200-299	10.3% (7.6, 13.1)
300-399	10.8% (6.5, 15.2)
400-499	7.4% (5.1, 9.7)
500+	7.8% (6.0, 9.5)

Notes:

^a95% CI = 95% Confidence Interval.

Champions for Healthy Change (C4HC) - a recent snapshot of obesity prevalence in a SNAP-Eligible population in California

Champions for Healthy Change (C4HC) is an on-going study of the impact of SNAP-Ed in California. While this dataset does not provide data that is generalizable statewide, it

does provide a unique opportunity to assess obesity prevalence in a select population of low-income, SNAP-eligible mothers, adolescents, and children sampled from 17 counties in California (Appendix Table 1). Estimates are not intended for use as population prevalence rates, as the C4HC sample was not constructed to be representative of the state of California.

Obesity Prevalence among Low-Income Mothers in C4HC

In 2014, the prevalence of obesity among low-income mothers in the C4HC sample was 48.0 percent. Within the C4HC sample of low-income women, no ethnic group met the Healthy People 2020 target, and all groups had very high obesity rates, though the rates were moderately higher among African American and Latina mothers compared to non-Latina White mothers.

Figure 25. Prevalence of Obesity Among Low-income Mothers in 17 Counties in CA, by Race/Ethnicity, C4HC, 2014

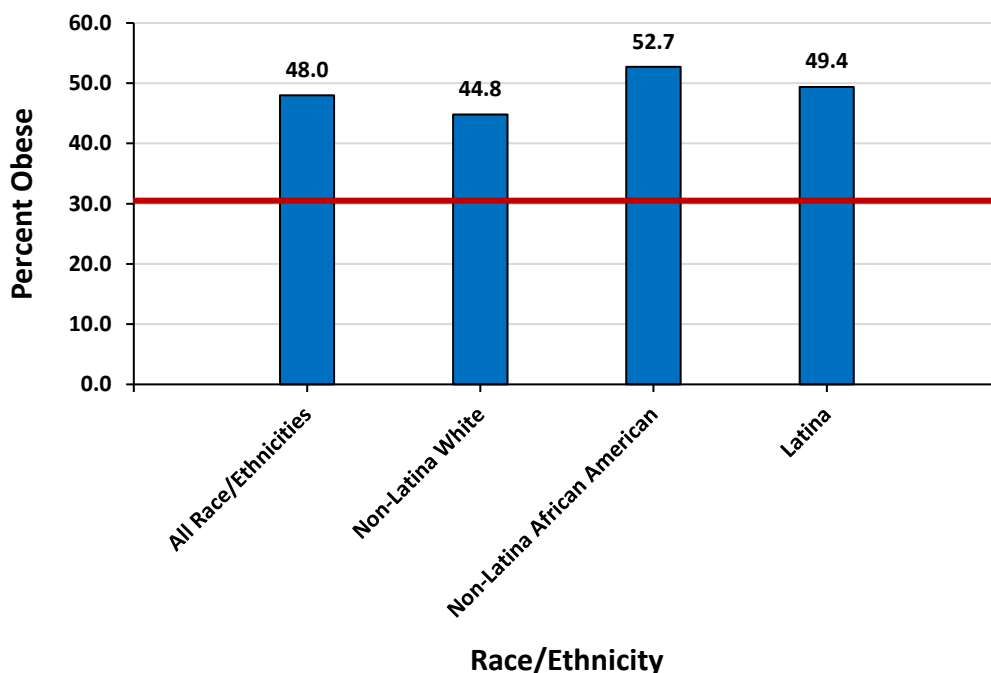


Table 31. Prevalence of Obesity Among Low-Income Mothers in 17 Counties in CA, by Race/Ethnicity, C4HC, 2014

Race/Ethnicity	Obese (%)
All Race/Ethnicities	48.0%
Non-Latina White	44.8%
Non-Latina African American	52.7%
Latina	49.4%

Obesity Prevalence among Low-Income Adolescents in C4HC

The prevalence of obesity among low-income adolescents in the C4HC sample in 2014 (21.3 percent) exceeded the Healthy People 2020 target. Non-Latino African American adolescents had the highest obesity prevalence (23.2 percent), but the obesity rates for Non-Latino White and Latino adolescents (18.2 percent and 21.9 percent, respectively) also were above the target.

Figure 26. Prevalence of Obesity Among Low-income Adolescents in 17 Counties in CA, by Race/Ethnicity, C4HC, 2014

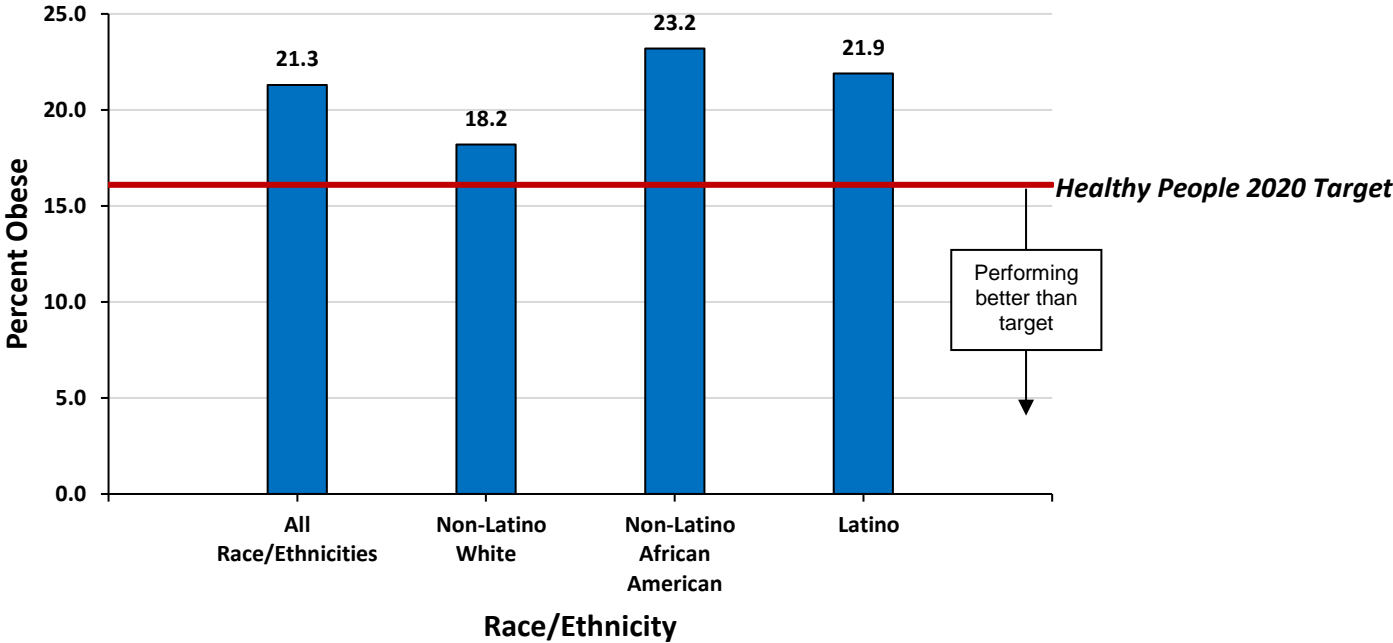


Table 32. Prevalence of Obesity Among Low-Income Adolescents in 17 Counties in CA, by Race/Ethnicity, C4HC, 2014

Race/Ethnicity	Obese (%)
All Race/Ethnicities	21.3%
Non-Latino White	18.2%
Non-Latino African American	23.2%
Latino	21.9%

Obesity Prevalence among Low-Income Children in C4HC

In 2014, the prevalence of obesity among children 6-11 years in the C4HC sample was 31.9 percent, far exceeding the *Healthy People 2020* target of ≤ 15.7 percent. Although obesity was highest among Latino children in this sample (35.3 percent), the rates for African American children (32.0 percent) and for White children (25.2 percent) also were higher than the target for this age group.

Figure 27. Prevalence of Obesity Among Low-income Older Children in 17 Counties in CA, by Race/Ethnicity, C4HC, 2014

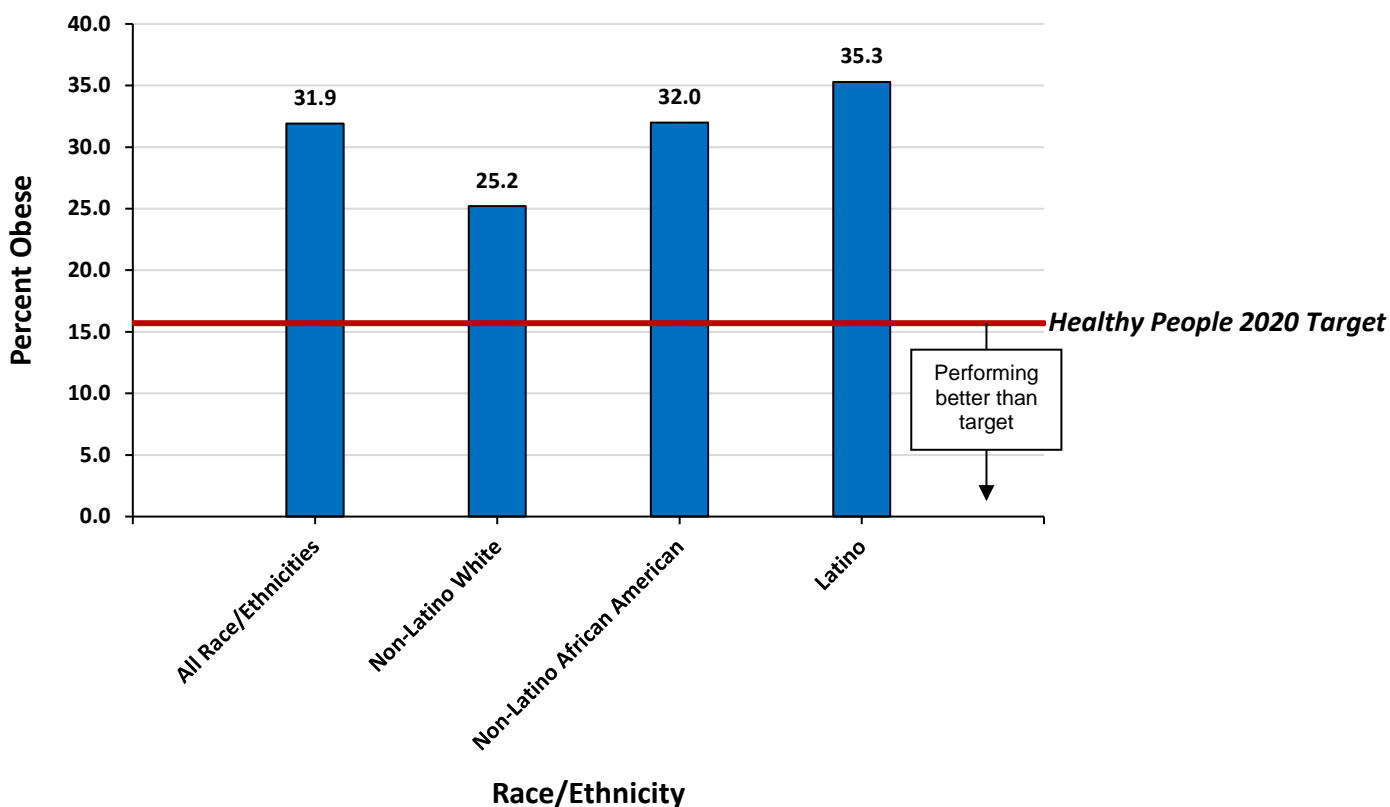


Table 33. Prevalence of Obesity Among Low-Income Older Children in 17 Counties in CA, by Race/Ethnicity, C4HC, 2014

Race/Ethnicity	Obese (%)
All Race/Ethnicities	31.9%
Non-Latino White	25.2%
Non-Latino African American	32.0%
Latino	35.3%

Health Consequences and Costs of Obesity

Obesity poses a major public health challenge; it increases the risk for many health conditions (Table 34) and contributes to some of the leading causes of preventable death.^{54,55} The cost of obesity is substantial and is likely to increase significantly over time as the rates of obesity and related health conditions rise (Figure 28).^{46, 54} These health conditions, among adults, represent 20 percent of the total annual medical expenses in the United States, or about \$190.2 billion annually.⁵⁶ Each year, the

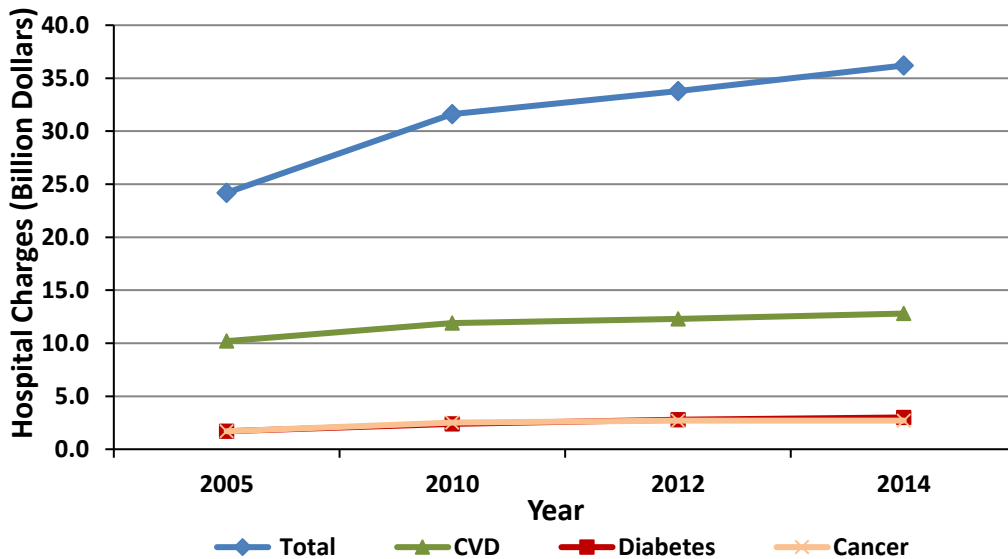
medical expenses per person among obese adults are estimated to be \$1,429 higher than the medical expenses of normal weight adults.⁵⁷

Table 34. Obesity-Related Health Conditions

Obesity-Related Health Conditions ⁵⁴
Coronary heart disease, stroke, and high blood pressure
Type 2 diabetes
Cancers, such as endometrial, breast, and colon cancer
High total cholesterol or high levels of triglycerides
Liver and gallbladder disease
Sleep apnea and respiratory problems
Degeneration of cartilage and underlying bone within a joint
Reproductive health complications such as infertility
Mental health conditions

According to data from the California Office of Statewide Health Planning and Development (OSHPD), hospital charges for obesity-related conditions, and other consequences of obesity, have increased by 39.7 percent between 2005 and 2014 (Figure 28).⁵⁸ In 2014, obesity-related cardiovascular disease (CVD) costs accounted for the largest proportion of total obesity-related hospital charges, at \$12.8 billion (Figure 28). In comparison, the hospital charges for obesity-related diabetes and obesity-related cancer were \$3.0 billion and \$2.7 billion, respectively. In 2014, there were nearly half a million hospital admissions due to obesity-related conditions in California, costing \$36.2 billion in hospital charges (Table 35). Furthermore, \$7.8 billion (21.6 percent) of those charges were paid by California’s Medi-Cal system. (Table 36).

Figure 28. Obesity-Related Inpatient Hospital Charges in California, Total^a, and by Condition, OSHPD, 2005-2014 **DO NOT USE THIS FIGURE- THE ONE YOU HAVE ALREADY IS BETTER DO NOT REPLACE IT**



Notes:

^aTotal obesity-related inpatient hospital charges

Table 35. Obesity-Related Inpatient Hospital Charges in California, Total^a, and by Condition, OSHPD, 2014^b

Obesity-Related Condition	Number of Admissions	Hospital Charges, Billions
Cardiovascular disease	138,937	\$12.8
Diabetes	54,251	\$3.0
Cancer	28,160	\$2.7
Total^a	426,529	\$36.2

Notes:

^aTotal obesity-related inpatient hospital charges

^bThis table was generated using a list of obesity-related ICD codes published elsewhere.⁵⁹

Table 36. Medi-Cal Obesity-Related Inpatient Hospital Charges in California, by Condition and Percent of All Payers, OSHPD, 2014^a

Obesity Associated Conditions	Number of Admissions (n (%))	Hospital Charges, Billions
Cardiovascular disease	26,855 (19.3%)	\$2.7 (21.1%)
Diabetes	21,213 (39.1%)	\$1.0 (36.7%)
Cancer	4,912 (17.4%)	\$0.5 (17.0%)
Total^b	90,018 (21.1%)	\$7.8(21.6%)

Notes:

^aThis table was generated using a list of obesity-related ICD codes published elsewhere.⁵⁹

Conclusion

California continues to face disparities in population obesity. While some subgroups appear to meet the Healthy People 2020 targets, others greatly exceed them. Generally, it is the poorest Californians who experience the highest rates of obesity, as well as groups of color, particularly Latino and African American adults and Latino, African American, Native Hawaiian/Pacific Islander, and American Indian/Alaska Native children. Obesity presents high costs to individuals. It also challenges the State's finances due to lost productivity, as well as direct medical costs. Addressing the main drivers of obesity by making it easier for people to eat well and be physically active, could improve quality of life, enhance worker productivity, and save the State money. One model suggests that if adult BMI were reduced by as little as 5 percent, California could potentially save \$81.7 billion in obesity-related health care costs by 2030.⁶⁰

References

1. Flegal KM, Kruszon-Moran D, Carroll MD, Fryar CD, Ogden CL. Trends in Obesity Among Adults in the United States, 2005 to 2014. *Journal of the American Medical Association*. Jun 7 2016;315(21):2284-2291.
2. Ogden CL, Carroll MD, Lawman HG, et al. Trends in Obesity Prevalence Among Children and Adolescents in the United States, 1988-1994 Through 2013-2014. *Journal of the American Medical Association*. Jun 7 2016;315(21):2292-2299.
3. Ogden CL, Carroll MD, Fryar CD, Flegal KM. Prevalence of obesity among adults and youth: United States, 2011–2014. NCHS data brief, no 219. Hyattsville, MD: National Center for Health Statistics. 2015.
4. Krueger PM, Reither EN. Mind the Gap: Race/Ethnic and Socioeconomic Disparities in Obesity. *Current diabetes reports*. 2015 Nov 1;15(11):1-9.
5. Trust for America’s Health, Foundation RWJ. *State of Obesity: 2016*. <http://stateofobesity.org/files/stateofobesity2016.pdf>. Accessed October 26, 2016.
6. Guh DP, Zhang W, Bansback N, Amarsi Z, Birmingham CL, Anis AH. The incidence of co-morbidities related to obesity and overweight: a systematic review and meta-analysis. *BMC public health*. 2009 Mar 25;9(1):1.
7. Emerging Risk Factors Collaboration. Separate and combined associations of body-mass index and abdominal adiposity with cardiovascular disease: collaborative analysis of 58 prospective studies. *The Lancet*. 2011 Apr 1;377(9771):1085-95.
8. Renehan AG, Tyson M, Egger M, Heller RF, Zwahlen M. Body-mass index and incidence of cancer: a systematic review and meta-analysis of prospective observational studies. *The Lancet*. 2008 Feb 22;371(9612):569-78.
9. Adams KF, Schatzkin A, Harris TB, Kipnis V, Mouw T, Ballard-Barbash R, Hollenbeck A, Leitzmann MF. Overweight, obesity, and mortality in a large prospective cohort of persons 50 to 71 years old. *New England Journal of Medicine*. 2006 Aug 24;355(8):763-78.
10. Tsai AG, Williamson DF, Glick HA. Direct medical cost of overweight and obesity in the USA: a quantitative systematic review. *Obesity Reviews*. 2011 Jan 1;12(1):50-61.
11. Andreyeva T, Luedicke J, Wang YC. State-level estimates of obesity-attributable costs of absenteeism. *Journal of occupational and environmental medicine/American College of Occupational and Environmental Medicine*. 2014 Nov;56(11):1120-7.
12. Hammond RA, Levine R. The economic impact of obesity in the United States. *Journal of Diabetes, Metabolic Syndrome, and Obesity*. 2010 Aug 30;3(1):285-95.
13. United States Department of Health and Human Services. Healthy People 2020, Topics and Objectives.

- <http://www.healthypeople.gov/2020/topicsobjectives2020/default.aspx>. Accessed October 24, 2016.
14. Centers for Disease Control and Prevention, National Center for Health Statistics. Clinical Growth Charts. http://www.cdc.gov/growthcharts/clinical_charts.htm. Accessed July 13, 2016.
 15. California Department of Public Health Obesity Prevention Program. California Obesity Prevention Plan: A Vision for Tomorrow, Strategic Actions for Today. 2010.
 16. Malik VS, Pan A, Willett WC, Hu FB. Sugar-sweetened beverages and weight gain in children and adults: a systematic review and meta-analysis. *The American Journal of Clinical Nutrition*. 2013 Oct 1;98(4):1084-102.
 17. Bahadoran Z, Mirmiran P, Azizi F. Fast Food Pattern and Cardiometabolic Disorders: A Review of Current Studies. *Health Promotion Perspectives*. 2015;5(4):231.
 18. Duffey KJ, Steffen LM, Van Horn L, Jacobs DR, Popkin BM. Dietary patterns matter: diet beverages and cardiometabolic risks in the longitudinal Coronary Artery Risk Development in Young Adults (CARDIA) Study. *The American Journal of Clinical Nutrition*. 2012 Apr 1;95(4):909-15.
 19. Mameli C, Mazzantini S, Zuccotti GV. Nutrition in the First 1000 Days: The Origin of Childhood Obesity. *International Journal of Environmental Research and Public Health*. 2016 Aug 23;13(9):838.
 20. Bertola ML, Mukamal KJ, Cahill LE, Hou T, Ludwig DS, Mozaffarian D, Willett WC, Hu FB, Rimm EB. Changes in intake of fruits and vegetables and weight change in United States men and women followed for up to 24 years: analysis from three prospective cohort studies. *PLoS Medicine*. 2015 Sep 22;12(9):e1001878.
 21. Wareham NJ, van Sluijs EM, Ekelund U. Physical activity and obesity prevention: a review of the current evidence. *Proceedings of the Nutrition Society*. 2005 May 1;64(02):229-47.
 22. Seo DC, Li K. Leisure-time physical activity dose response effects on obesity among US adults: results from the 1999–2006 National Health and Nutrition Examination Survey. *Journal of Epidemiology and Community Health*. 2010 May 1;64(5):426-31.
 23. Azevedo LB, Ling J, Soos I, Robalino S, Ells L. The effectiveness of sedentary behaviour interventions for reducing body mass index in children and adolescents: systematic review and meta-analysis. *Obesity Reviews*. 2016 Jul 1;17(7):623-35.
 24. Blanck HM, McCullough ML, Patel AV, Gillespie C, Calle EE, Cokkinides VE, Galuska DA, Khan LK, Serdula MK. Sedentary Behavior, Recreational Physical Activity, and 7-Year Weight Gain among Postmenopausal US Women. *Obesity*. 2007 Jun 1;15(6):1578-88.
 25. Economos CD, Hatfield DP, King AC, Ayala GX, Pentz MA. Food and physical activity environments: An energy balance approach for research and practice. *American Journal of Preventive Medicine*. 2015 May 31;48(5):620-9.
 26. Novak NL, Brownell KD. Obesity: a public health approach. *Psychiatric Clinics of North America*. 2011 Dec 31;34(4):895-909.

27. California Center for Public Health Advocacy, PolicyLink, UCLA Center for Health Policy Research. *Designed for Disease: The Link Between Local Food Environments and Obesity and Diabetes*. 2008.
<http://healthpolicy.ucla.edu/publications/Documents/PDF/Designed%20for%20Disease%20The%20Link%20Between%20Local%20Food%20Environments%20and%20Obesity%20and%20Diabetes.pdf>. Accessed October 24, 2016.
28. Hawkes C, Smith TG, Jewell J, Wardle J, Hammond RA, Friel S, Thow AM, Kain J. Smart food policies for obesity prevention. *The Lancet*. 2015 Jun 19;385(9985):2410-21.
29. Ello-Martin JA, Ledikwe JH, Rolls BJ. The influence of food portion size and energy density on energy intake: implications for weight management. *The American Journal of Clinical Nutrition*. 2005 Jul 1;82(1):236S-41S.
30. Rolls, Barbara J., Liane S. Roe, and Jennifer S. Meengs. "The effect of large portion sizes on energy intake is sustained for 11 days." *Obesity* 15.6 (2007): 1535-1543.
31. Carver A, Timperio A, Crawford D. Playing it safe: The influence of neighbourhood safety on children's physical activity—A review. *Health & Place*. 2008 Jun 30;14(2):217-27.
32. Molnar BE, Gortmaker SL, Bull FC, Buka SL. Unsafe to play? Neighborhood disorder and lack of safety predict reduced physical activity among urban children and adolescents. *American Journal of Health Promotion*. 2004 May 1;18(5):378-86.
33. Mailey EL, Huberty J, Dinkel D, McAuley E. Physical activity barriers and facilitators among working mothers and fathers. *BMC Public Health*. 2014 Jun 27;14(1):1.
34. Parsons TJ, Manor O, Power C. Television viewing and obesity: a prospective study in the 1958 British birth cohort. *European Journal of Clinical Nutrition*. 2008 Dec 1;62(12):1355-63.
35. Landhuis CE, Poulton R, Welch D, Hancox RJ. Programming Obesity and Poor Fitness: The Long-term Impact of Childhood Television. *Obesity*. 2008 Jun 1;16(6):1457-9.
36. UCLA Center for Health Policy Research. CHIS Making and Impact - 2015. <http://healthpolicy.ucla.edu/chis/about/Documents/CHISImpactFS2015.pdf>. Accessed October 10, 2016.
37. UCLA Center for Health Policy Research. CHIS 2013-2014 Sample Design. http://healthpolicy.ucla.edu/chis/design/Documents/sample_desc_2013.pdf. Accessed October 10, 2016.
38. Weden MM, Brownell PB, Rendall MS, Lau C, Fernandes M, Nazarov Z. Parent-reported height and weight as sources of bias in survey estimates of childhood obesity. *American Journal of Epidemiology*. 2013 Aug 1;178(3):461-73.
39. California Department of Education. Physical Fitness Test Results. <http://data1.cde.ca.gov/dataquest/PhysFitness/PFTDN/Summary2011.aspx?r=0&t=4&y=2014-15&c=0000000000000000&n=0000>. Accessed October 25, 2016.
40. Nutrition, Physical Activity and Obesity Data, Trends and Maps web site. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health

- Promotion, Division of Nutrition, Physical Activity and Obesity, Atlanta, GA, 2015. Available at <http://www.cdc.gov/nccdphp/DNPAO/index.html>.
41. [Centers for Disease Control and Prevention: Behavioral Risk Factor Surveillance System. <http://www.cdc.gov/brfss>.](http://www.cdc.gov/brfss)
 42. Eidelman AI, Schanler RJ, Johnston M, et al. Breastfeeding and the use of human milk. *Pediatrics*. 2012;129(3):e827-e841.
 43. Council on Communications and Media. Children, Adolescents, and the Media. *Pediatrics*. 2013. <http://pediatrics.aappublications.org/content/early/2013/10/24/peds.2013-2656.abstract>. Accessed October 24, 2016.
 44. U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2015-2020*. Washington, D.C.: U.S. Government Printing Office;2015.
 45. United States Department of Health and Human Services. *Physical Activity Guidelines for Americans, 2008*. Washington D.C.: United States Department of Health and Human Services;2008.
 46. University of California Los Angeles, Center for Health Policy Research. California Health Interview Survey 2014. 2014; <http://ask.chis.ucla.edu/main/default.asp>. Accessed October 24, 2016.
 47. California Department of Public Health, Nutrition Education and Obesity Prevention Branch. Behavior Risk Factor Surveillance System 2013.
 48. American Academy of Pediatrics. Media and Young Minds Council on Communications and Media. *Pediatrics*. 2016. <http://pediatrics.aappublications.org/content/138/5/e20162591>. Accessed November 29, 2016.
 49. Suglia SF, Shelton RC, Hsiao A, Wang YC, Rundle A, Link BG. Why the Neighborhood Social Environment Is Critical in Obesity Prevention. *Journal of Urban Health*. 2016 Feb 1;93(1):206-12.
 50. University of California Los Angeles, Center for Health Policy Research. California Health Interview Survey 2001-2014. 2001-2014; <http://ask.chis.ucla.edu/main/default.asp>. Accessed October 26, 2016.
 51. University of California Los Angeles, Center for Health Policy Research. California Health Interview Survey 2013-2014. 2013-2014; <http://ask.chis.ucla.edu/main/default.asp>. Accessed October 26, 2016.
 52. University of California Los Angeles, Center for Health Policy Research. California Health Interview Survey 2001. 2001; <http://ask.chis.ucla.edu/main/default.asp>. Accessed October 26, 2016.
 53. University of California Los Angeles, Center for Health Policy Research. California Health Interview Survey 2011-2014. 2011-2014; <http://ask.chis.ucla.edu/main/default.asp>. Accessed October 26, 2016.
 54. Centers for Disease Control and Prevention. *Obesity: Halting the epidemic by making health easier*. Atlanta, Georgia: Centers for Disease Control and Prevention;2011.
 55. National Center for Health Statistics. Health, United States, 2012 (Table 20). Centers for Disease Control and Prevention; 2013: <http://www.cdc.gov/nchs/data/hus/hus12.pdf>. Accessed December 5, 2013.

56. Cawley J, Meyerhoefer C. The medical care costs of obesity: an instrumental variables approach. *Journal of Health Economics*. Jan 2012;31(1):219-230.
57. Finkelstein EA, Trogon JG, Cohen JW, Dietz W. Annual medical spending attributable to obesity: payer-and service-specific estimates. *Health Affairs (Project Hope)*. Sep-Oct 2009;28(5):w822-831.
58. California Department of Public Health, Nutrition Education and Obesity Prevention Branch. Office of Statewide Health Planning and Development 2005-2014.
59. Chenoweth D. The Economic Costs of Physical Inactivity, Obesity, and Overweight in California Adults During the Year 2000: A Technical Analysis (Table 3). Sacramento, CA: California Department of Health Services;2005.
60. Trust for America's Health, Foundation RWJ. *F as in Fat: How Obesity threatens America's Future*. Washington, DC, 2012.

Appendix A. Supplementary Information

Appendix Table 1. List of the 17 Counties in California Included in the C4HC Sample, 2014

County
Alameda
Contra Costa
Fresno
Kern
Los Angeles
Orange
Riverside
Sacramento
San Bernardino
San Diego
San Joaquin
Santa Clara
Shasta
Solano
Sonoma
Tulare
Ventura

Appendix Table 2. Sample Sizes of Included Data Sources.

Data Source	Year	Population	Sample Size
CHIS	2014	Adults	19,516
CHIS	2014	Adolescents	1,052
CHIS	2014	Children	2,592
FitnessGram	2013-2014	9 th grade students	441,730
FitnessGram	2013-2014	7 th grade students	439,476
FitnessGram	2013-2014	5 th grade students	455,897
C4HC	2014	Low-income mothers	5,684
C4HC	2014	Low-income adolescents	1,613
C4HC	2014	Low-income children	1,319
National Immunization Survey	2012 births	Infants	331-335
BRFSS	2013	Adults	10,004