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Obesity in California

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Executive Summary

In California, 7.4 million adults and adolescents were obese in 2011-12. Moreover, obesity among California adults is increasing. The prevalence of adult obesity rose from 19 percent in 2001 to 25 percent in 2011-12. Obesity is a significant risk factor for type 2 diabetes, heart disease, stroke, and some cancers. Although the prevalence of obesity is high among all Californians, it disproportionately affects people of color and the poor. Physical activity and dietary behaviors, including levels of consumption of soda and fast food and of fruits and vegetables, are related to obesity. Obesity is also linked with environmental factors such as accessibility and affordability of fresh produce, neighborhood safety, park availability, and social cohesion. Policy and environmental changes that promote positive dietary and physical activity behaviors can address disparities in these areas and help prevent obesity.

Key findings of this report include:

Obesity in California is widespread, but it varies by county.

- The prevalence of obesity among adults in California increased from 19 percent in 2001 to 25 percent in 2011-12.
- Obesity prevalence among adults varied considerably by county in 2011-12, ranging from 11 percent in the County of San Francisco to 42 percent in Imperial County.
- From 2001 to 2011-12, the prevalence of obesity among adults increased by at least 10 percentage points in six counties or groups of small counties —Tulare, Tehama/Glenn/Colusa, Solano, Imperial, Santa Cruz, and Napa.

Obesity disproportionately affects vulnerable Californians.

- Thirty-one percent of adult Californians with incomes below 200 percent of the Federal Poverty Level (FPL) were obese compared to 20 percent with incomes at or above 400% FPL.
- The prevalence of obesity was higher among African-Americans, American Indians, and Latinos than among whites.
- Latino, white, African-American, and Asian adults all experienced increases in the prevalence of obesity between 2001 and 2011-12.

Health behaviors are associated with the prevalence of obesity in California.

- Adults who consumed soda one or more times per day or fast food two or more times per week were more likely to be obese than those who consumed these foods less frequently.
- Adults who consumed fruits and vegetables three or more times per day were less likely to be obese compared to those who ate fruits and vegetables less frequently.
- Adults who walked for transportation or leisure were less likely to be obese than those who did not.

Obesity is higher among adults who lack access to affordable fruits and vegetables.

- California adults who reported never or only sometimes having access to affordable fresh produce had a higher prevalence of obesity than those who reported always or usually having access to affordable fresh fruits and vegetables.

Neighborhood safety is linked with obesity and physical activity.

- Obesity prevalence was higher among adults who reported never or only sometimes feeling safe in their neighborhoods compared to those who reported always or mostly feeling safe in their neighborhoods.
- California adults who reported always or mostly feeling safe in their neighborhoods were more likely to walk for leisure than those who reported never/sometimes feeling safe.

Social cohesion is linked with obesity and physical activity.

- Obesity prevalence was higher among California adults living in neighborhoods with lower social cohesion than among those living in neighborhoods with higher social cohesion.
- California adults living in neighborhoods with lower social cohesion were less likely to walk for leisure than those living in neighborhoods with higher social cohesion.

Obesity in California

Introduction

Obesity prevalence in the United States increased dramatically over the past 30 years.[1] In the 1970s, about 15 percent of adults were obese; by 2004, the rate had climbed to 32 percent.[1] Although the prevalence of obesity among youths is lower than among adults, children and adolescents have experienced considerably larger increases in obesity prevalence. Between the early 1970s and 2003-2004, the prevalence of obesity nearly tripled among youth ages 12 to 19, from 6 percent to 17 percent, and more than quadrupled among children ages 6 to 11, rising from 4 percent to 19 percent.[1-4] Nationally, the prevalence of obesity among youths and adults has not changed significantly since 2004, but rates remain high.[5] The most recent data from the National Health and Nutrition Examination Survey indicated that approximately 35 percent of adults were obese in 2011-12. Among youths, 34 percent of those ages 6 to 11 were overweight or obese, as were 35 percent of those ages 12 to 19.[5]

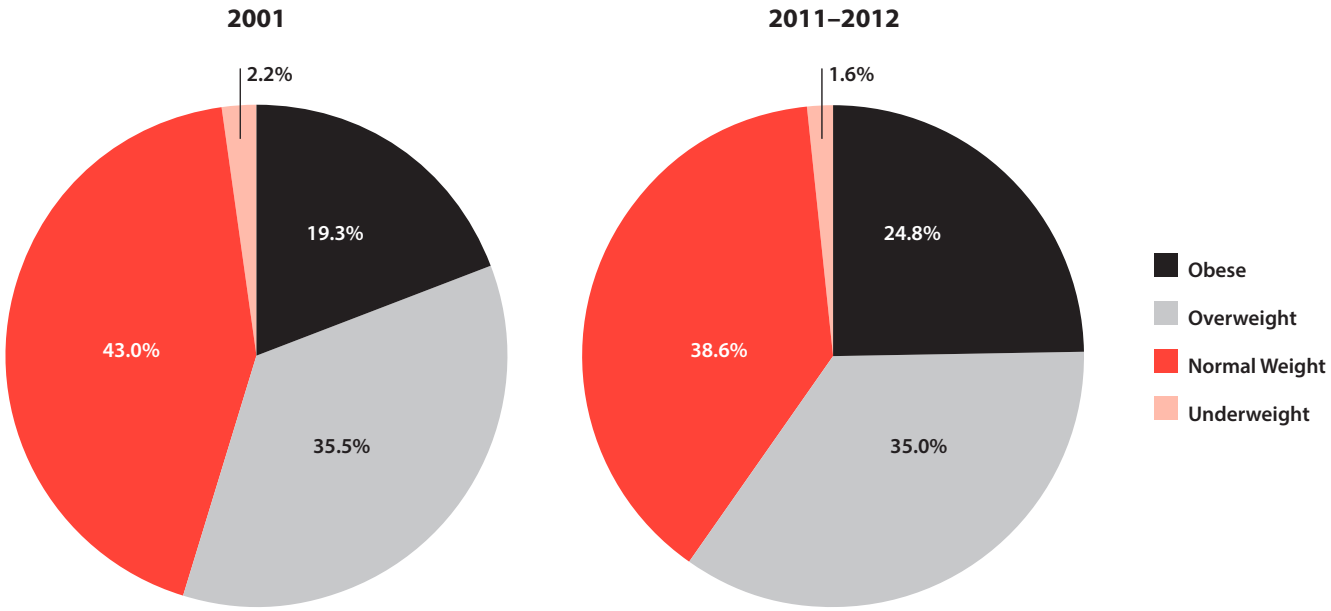
Obesity is a significant risk factor for serious health conditions, including type 2 diabetes, heart disease, stroke, and some cancers. In addition to increasing the risk for serious health conditions, obesity is costly. In 2008, the Centers for Disease Control and Prevention estimated the annual medical costs of obesity in the United States at $147 billion.[6] California spends more public and private money on the health consequences of obesity than any other state.[7] Including lost productivity, overweight and obesity in California costs families, employers, the health care industry, and the government more than $21 billion each year.[8]

Using data from the California Health Interview Survey (CHIS), this report examines variations in the prevalence of obesity, as well as income and racial/ethnic disparities, between 2001 and 2011-12. It also examines health behaviors related to obesity and neighborhood environmental factors that can contribute to or mitigate obesity risk.

Prevalence of Obesity

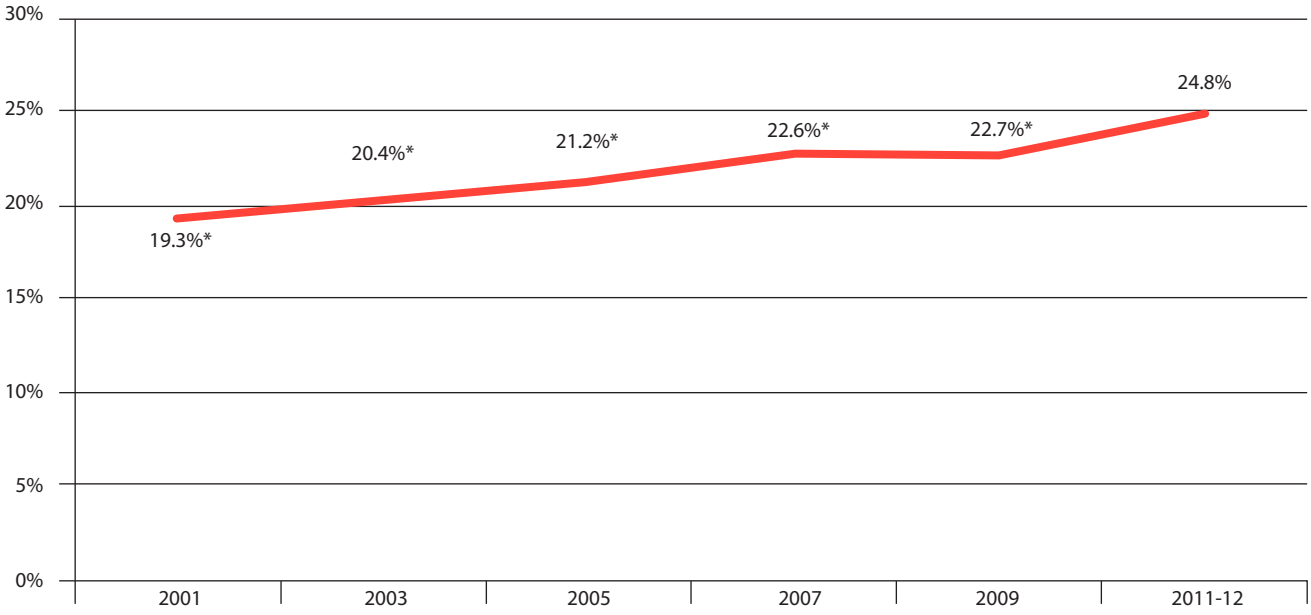
The prevalence of adult obesity in California increased by more than 30 percent between 2001 and 2011-12. In 2011-12, one quarter of adults (25 percent) were obese, a statistically significant increase from 19 percent in 2001 (Exhibits 1 and 2). More than 1 million California adolescents were overweight (16 percent) or obese (17 percent) in 2011-12. The prevalence of overweight and obesity among adolescents increased from 31 percent in 2001 to 32 percent in 2011-12, but this change was not statistically significant. In total, nearly 18 million California adults and adolescents were either overweight or obese in 2011-12, with 7.4 million of these identified as obese.

Exhibit 1.
Body Mass Index, Adults 18 Years and Over, California, 2001 and 2011-12



Source: 2001 and 2011-12 California Health Interview Surveys

Exhibit 2.
Obesity Prevalence by Year, Adults 18 Years and Over, California, 2001 through 2011-12



Source: 2001, 2003, 2005, 2007, 2009, and 2011-12 California Health Interview Surveys

* Indicates significant difference from 2011-12; $p < 0.05$.

Obesity is a complex condition influenced by neighborhood environmental factors, behavior, genetics, culture, and socioeconomic status. Although obesity results from energy imbalance (eating too many calories and not getting enough physical activity), neighborhood environments play a critical role in physical activity and healthy eating. The next sections of this report detail how obesity varies geographically in California and highlights disparities in obesity by income and race/ethnicity. This report focuses on health behaviors and environmental factors related to obesity that are most likely to be impacted by interventions, programs, and policies. It also presents information on disparities in environmental factors and health behaviors that can contribute to socioeconomic differences in obesity.

Obesity Prevalence Varies by County and County Group

The significant increase in obesity prevalence between 2001 and 2011-12 was seen in every major region in the state (Exhibit 3). Obesity prevalence among adults still varied considerably by county, however, ranging from 11 percent in the County of San Francisco to 42 percent in Imperial County (Exhibit 3). In 11 counties, the prevalence of obesity was lower than that of California. Following the statewide trend, the prevalence of obesity increased among adults in the majority of counties between 2001 and 2011-12. Obesity prevalence increased by at least 10 percentage points in six counties or groups of small counties. Tulare and Tehama/Glenn/Colusa counties showed the largest increases with rates 14 percentage points higher.

Overweight and obesity among California adolescents also varied from county to county, ranging from 14 percent in Marin County to 49 percent in Solano County (Exhibit 4). To produce more precise estimates for adolescent overweight and obesity by county, the report combines data from CHIS 2009 and CHIS 2011-12. The prevalence of overweight and obesity was at least 16 percentage points higher than that of California in Tehama/Glenn/Colusa, Tulare, and Solano counties. Marin, Humboldt/Del Norte, and Santa Clara counties had a lower prevalence of overweight and obesity than that of California. Unlike the adult population, adolescents have experienced both increases and decreases in the prevalence of overweight and obesity across regions over the past decade; however, these changes were only statistically significant for Alameda County.

This regional variation is likely due to a number of factors, including differences in demographic, social, economic, and environmental characteristics, as well as differences in local policies and programs. For example, the three counties/county groups with the highest rates of adult obesity — Imperial, Glenn/Tehama/Colusa, Tulare — were among the counties with the lowest median incomes (all had median incomes below $42,000, considerably lower than the statewide median income of $61,000). Conversely, San Francisco, Marin, and San Mateo counties all had obesity rates below 17 percent. These counties had median incomes above $74,000, some of the highest median incomes in the state.

In addition, the food environment in California varies greatly from place to place — with some counties having limited availability of stores offering fresh fruits and vegetables compared to fast foods and convenience stores.[9] The affordability of fresh produce also varies considerably. For example, San Francisco, San Mateo, Marin, and San Luis Obispo (the counties with the lowest adult obesity prevalence) had the highest percentage of adults reporting that fresh fruits and vegetables were always affordable (57 percent to 60 percent) compared to Imperial, where only 31 percent of adults reported fresh produce always affordable. Living in an unhealthy food environment has been linked to having unhealthy eating behaviors, such as greater consumption of fast food and soda, and to a higher prevalence of obesity.[10-13] Similarly, resources and opportunities that encourage physical activity, such as parks and physical education programs, vary by location. Increased access to parks and recreational resources provides opportunities for physical activity and protects against obesity.[14,15]

Exhibit 3.
Obesity Prevalence by County or County Group, Adults 18 Years and Over, California, 2001 and 2011-12

	2001			2011-12		
	Obesity Prevalence (%)	(95% CI)	Estimated Number of Obese Adults	Obesity Prevalence (%)	(95% CI)	Estimated Number of Obese Adults
Northern and Sierra Counties	**20.9***	**(19.7, 22.1)**	**195,295**	**26.3+**	**(24.4, 28.3)**	**280,092**
Butte	18.9	(15.7, 22.1)	28,255	23.8	(18.5, 29.1)	40,533
Shasta	20.8	(17.5, 24.2)	24,932	25.7	(20.1, 31.3)	35,196
Humboldt, Del Norte	22.0	(18.3, 25.7)	23,614	29.0	(22.8, 35.2)	34,578
Siskiyou, Lassen, Trinity, Modoc	24.4*	(20.7, 28.1)	16,251	31.6	(24.0, 39.2)	22,945
Mendocino, Lake	23.6*	(20.1, 27.2)	24,885	26.4	(21.0, 31.9)	31,082
Tehama, Glenn, Colusa	24.3*	(20.7, 27.9)	16,554	38.2*+	(30.2, 46.2)	31,513
Sutter, Yuba	25.7*	(21.9, 29.5)	24,296	31.0*	(26.2, 35.8)	37,190
Nevada, Plumas, Sierra	16.0*	(12.7, 19.2)	14,334	20.0*	(16.0, 24.0)	19,958
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono, Alpine	16.7	(13.7, 19.7)	22,175	18.7*	(13.9, 23.5)	27,097
Greater Bay Area	**16.4***	**(15.5, 17.4)**	**829,011**	**20.1*+**	**(18.7, 21.6)**	**1,115,748**
Santa Clara	15.5*	(13.3, 17.7)	189,809	19.3*+	(16.3, 22.3)	262,546
Alameda	17.4	(14.8, 20.0)	188,007	21.0*	(17.7, 24.3)	243,444
Contra Costa	20.4	(17.5, 23.2)	141,074	24.0	(19.8, 28.2)	193,077
San Francisco	11.5*	(9.7, 13.3)	73,712	11.3*	(8.5, 14.2)	77,006
San Mateo	17.4	(14.2, 20.5)	91,087	16.6*	(12.2, 21.0)	93,650
Sonoma	14.1*	(11.3, 17.0)	47,130	21.5+	(16.7, 26.3)	80,491
Solano	22.5*	(20.0, 25.0)	60,866	35.9*+	(29.1, 42.6)	109,015
Marin	11.8*	(8.9, 14.8)	21,731	13.9*	(8.9, 18.9)	27,005
Napa	17.7	(14.3, 21.1)	15,594	28.9+	(19.7, 38.1)	29,513
Sacramento Area	**20.4**	**(18.4, 22.3)**	**267,892**	**24.9+**	**(21.9, 27.9)**	**403,618**
Sacramento	21.9	(19.2, 24.6)	194,100	28.0+	(23.6, 32.3)	295,181
Placer	15.7*	(12.8, 18.7)	29,635	18.1*	(13.7, 22.5)	49,153
Yolo	18.7	(15.1, 22.2)	22,617	17.9*	(13.2, 22.5)	27,325
El Dorado	18.3	(14.7, 22.0)	21,539	22.9	(17.2, 28.6)	31,960
San Joaquin Valley	**25.8***	**(24.4, 27.2)**	**556,991**	**33.0*+**	**(30.6, 35.4)**	**905,014**
Fresno	26.3*	(22.9, 29.7)	138,522	30.0*	(25.3, 34.7)	194,954
Kern	25.6*	(22.5, 28.7)	109,259	33.2*+	(26.9, 39.4)	184,731
San Joaquin	25.6*	(22.3, 28.9)	97,070	34.7*+	(28.7, 40.6)	168,392
Stanislaus	24.8*	(21.0, 28.6)	75,737	30.1	(24.0, 36.3)	111,992
Tulare	23.9*	(20.3, 27.5)	55,125	38.0*+	(31.5, 44.6)	115,431
Merced	29.6*	(25.5, 33.7)	40,761	34.1*	(26.3, 41.9)	60,375
Kings	27.1*	(23.2, 30.9)	20,687	36.6*	(25.7, 47.6)	34,778
Madera	25.4*	(21.4, 29.4)	19,830	34.4*	(25.7, 43.2)	34,361
Central Coast	**18.6**	**(17.0, 20.2)**	**272,936**	**22.5+**	**(20.0, 24.9)**	**372,432**
Ventura	17.5	(14.4, 20.6)	92,519	22.7	(18.0, 27.4)	139,793
Santa Barbara	17.2	(14.5, 19.9)	46,911	20.5	(14.8, 26.2)	63,720
Santa Cruz	15.2*	(11.9, 18.5)	27,673	27.1+	(20.0, 34.3)	54,352
San Luis Obispo	16.3	(13.1, 19.5)	28,939	12.6*	(9.2, 15.9)	25,396
Monterey, San Benito	25.3*	(21.3, 29.3)	76,894	27.1	(22.4, 31.8)	89,170
Los Angeles	**20.1**	**(19.1, 21.0)**	**1,324,995**	**24.7+**	**(23.3, 26.2)**	**1,831,421**
Los Angeles	20.1	(19.1, 21.0)	1,324,995	24.7+	(23.3, 26.2)	1,831,421
Other Southern California	**18.4**	**(17.4, 19.4)**	**1,162,963**	**25.5+**	**(24.1, 26.9)**	**1,983,353**
Orange	14.8*	(13.1, 16.4)	298,189	23.2+	(20.5, 25.8)	533,483
San Diego	16.5*	(14.8, 18.2)	332,239	22.1*+	(20.1, 24.0)	511,978
San Bernardino	24.9*	(22.1, 27.7)	285,103	33.2*+	(29.3, 37.0)	478,198
Riverside	20.9	(18.3, 23.6)	221,676	25.9+	(22.7, 29.2)	412,221
Imperial	29.0*	(24.8, 33.1)	25,756	41.7*+	(32.2, 51.2)	47,473
California	**19.3**	**(18.9, 19.8)**	**4,610,082**	**24.8+**	**(24.1, 25.5)**	**6,891,678**

Source: 2001 and 2011-12 California Health Interview Surveys

* Indicates significant difference from California prevalence; $p < 0.05$.

+ Indicates significant change from 2001 to 2011-12; $p < 0.05$.

Exhibit 4.
Prevalence of Overweight/Obesity by County or County Group, Adolescents Ages 12 to 17, California, 2001 and 2009/2011-12

	2001			2009 & 2011-12		
	Overweight & Obesity Prevalence (%)	(95% CI)	Estimated Number of Overweight and Obese Adolescents	Overweight & Obesity Prevalence (%)	(95% CI)	Estimated Number of Overweight and Obese Adolescents
Northern and Sierra Counties	**31.5**	**(27.3, 35.6)**	**36,631**	**30.1**	**(25.3, 34.9)**	**32,057**
Butte	43.5	(30.2, 56.8)	7,694	25.9	(13.3, 38.5)	4,311
Shasta	14.9*	(7.0, 22.8)	2,351	28.2	(12.4, 44.0)	3,720
Humboldt, Del Norte	33.7	(22.5, 45.0)	4,497	18.8*	(8.6, 28.9)	1,814
Siskiyou, Lassen, Trinity, Modoc	40.7	(27.2, 54.1)	3,552	34.3	(15.9, 52.7)	2,944
Mendocino, Lake	26.7	(14.0, 39.4)	3,240	32.1	(22.1, 42.1)	3,613
Tehama, Glenn, Colusa	31.7	(20.0, 43.4)	3,099	46.6*	(31.0, 62.2)	5,164
Sutter, Yuba	30.8	(17.8, 43.9)	3,897	34.6	(24.8, 44.4)	5,569
Nevada, Plumas, Sierra	26.7	(15.7, 37.7)	2,901	–	–	–
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono, Alpine	35.1	(22.2, 48.0)	5,399	–	–	–
Greater Bay Area	**31.4**	**(27.1, 35.8)**	**151,459**	**25.4*+**	**(21.2, 29.6)**	**136,328**
Santa Clara	26.9	(17.8, 35.9)	30,574	19.8*	(11.7, 28.0)	29,048
Alameda	41.1	(29.4, 52.9)	43,121	24.8+	(15.3, 34.3)	28,591
Contra Costa	24.6	(15.3, 33.9)	20,019	21.8	(13.2, 30.4)	19,711
San Francisco	22.6	(7.9, 37.3)	7,579	20.8	(9.0, 32.6)	7,545
San Mateo	34.9	(20.6, 49.3)	17,181	34.2	(18.6, 49.9)	17,045
Sonoma	37.0	(24.3, 49.6)	13,799	29.5	(14.4, 44.6)	11,002
Solano	36.1	(27.0, 45.2)	12,818	48.7*	(33.5, 64.0)	17,102
Marin	19.9	(8.9, 31.0)	3,144	13.7*	(7.0, 20.5)	2,156
Napa	31.9	(20.4, 43.4)	3,223	33.9	(16.6, 51.2)	4,128
Sacramento Area	**27.8**	**(20.5, 35.2)**	**46,296**	**23.5**	**(16.8, 30.2)**	**43,455**
Sacramento	29.4	(18.9, 39.8)	33,012	22.8	(13.8, 31.8)	27,985
Placer	22.4	(12.2, 32.7)	5,377	26.7	(12.5, 40.8)	8,344
Yolo	29.9	(18.2, 41.5)	4,395	32.5	(17.6, 47.3)	5,066
El Dorado	22.8	(13.7, 31.9)	3,512	–	–	–
San Joaquin Valley	**33.6**	**(29.2, 37.9)**	**109,165**	**34.5**	**(29.3, 39.6)**	**135,748**
Fresno	32.5	(21.6, 43.4)	24,139	33.6	(23.7, 43.5)	30,541
Kern	26.5	(17.4, 35.5)	17,966	29.0	(14.6, 43.4)	23,731
San Joaquin	35.0	(24.8, 45.1)	19,883	30.1	(18.1, 42.0)	20,831
Stanislaus	37.7	(25.3, 50.1)	17,653	36.2	(23.5, 49.0)	19,177
Tulare	36.5	(24.9, 48.2)	12,768	47.0*	(33.9, 60.2)	21,836
Merced	39.0	(26.5, 51.4)	9,288	37.7	(24.1, 51.4)	10,027
Kings	36.9	(26.6, 47.2)	3,784	43.3	(28.9, 57.7)	5,406
Madera	35.7	(24.5, 46.8)	3,684	30.7	(17.7, 43.7)	4,199
Central Coast	**28.9**	**(23.6, 34.1)**	**50,743**	**29.1**	**(22.9, 35.3)**	**53,934**
Ventura	25.4	(15.9, 34.9)	17,123	25.2	(15.1, 35.3)	18,239
Santa Barbara	27.1	(15.5, 38.7)	8,395	36.1	(20.5, 51.7)	12,250
Santa Cruz	20.3*	(10.9, 29.7)	4,189	32.7	(16.5, 49.0)	5,835
San Luis Obispo	23.6	(12.3, 34.9)	4,556	26.0	(12.2, 39.8)	5,141
Monterey, San Benito	43.9*	(31.9, 56.0)	16,480	30.0	(18.8, 41.1)	12,468
Los Angeles	**30.5**	**(26.7, 34.2)**	**222,813**	**35.3***	**(31.3, 39.3)**	**316,283**
Los Angeles	30.5	(26.7, 34.2)	222,813	35.3*	(31.3, 39.3)	316,283
Other Southern California	**29.5**	**(25.8, 33.1)**	**226,768**	**28.8**	**(24.7, 33.0)**	**276,146**
Orange	21.8*	(14.8, 28.8)	46,426	23.4	(15.1, 31.8)	61,468
San Diego	28.8	(22.4, 35.2)	64,416	28.3	(23.5, 33.1)	71,929
San Bernardino	35.1	(26.9, 43.3)	60,655	30.6	(20.9, 40.3)	63,403
Riverside	34.1	(25.4, 42.9)	50,359	33.5	(23.8, 43.1)	72,434
Imperial	39.2	(29.2, 49.2)	4,912	41.2	(28.8, 53.6)	6,913
California	**30.5**	**(28.7, 32.3)**	**843,875**	**30.5**	**(28.5, 32.4)**	**993,953**

Source: 2001, 2009, and 2011-12 California Health Interview Surveys. Adolescent data from 2009 and 2011-12 were combined to produce stable estimates for more counties.

– Indicates estimate was not statistically reliable.

* Indicates significant difference from California prevalence; $p < 0.05$.

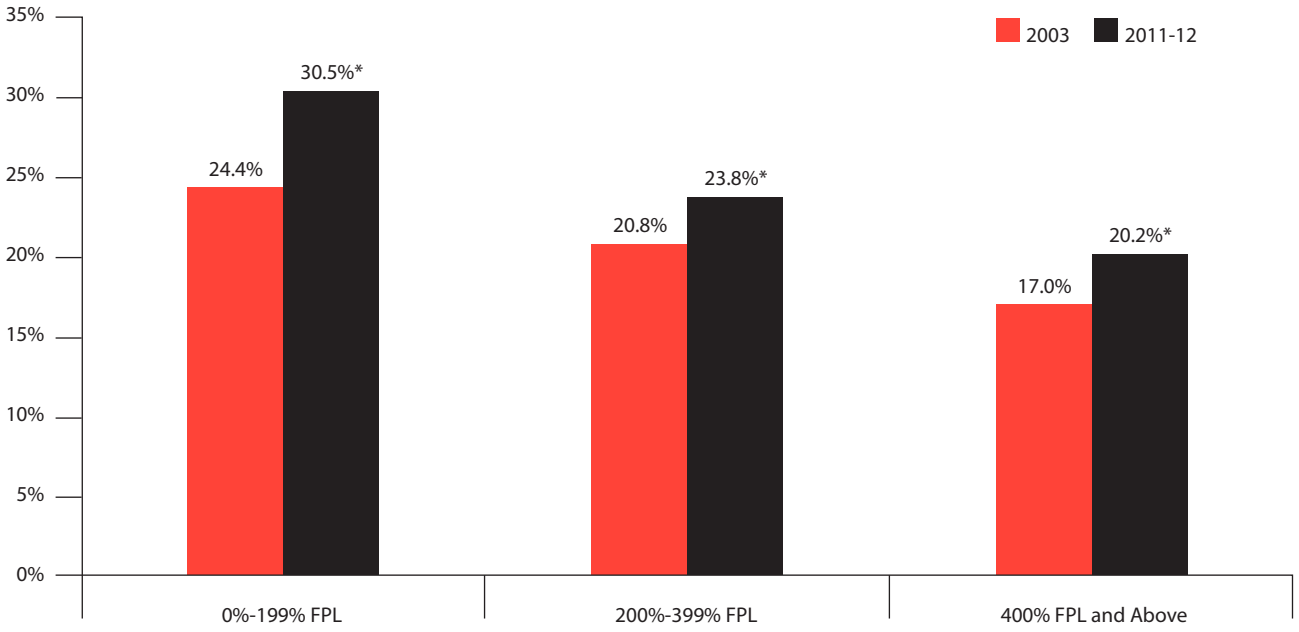
+ Indicates significant change from 2001 to 2009/2011-12; $p < 0.05$.

Obesity Disproportionately Affects Low-income Individuals and People of Color

Obesity disproportionately affects California's poorest individuals. Adults living below 200% FPL had a higher prevalence of obesity (31 percent) than their higher income counterparts (20 percent). Disparities across income levels have been consistent since 2003 (Exhibit 5). However, all groups experienced statistically significant increases in obesity prevalence since 2003.

Similar disparities are found among California adolescents. The prevalence of overweight and obesity among low-income teens was nearly twice as high as for those with higher household incomes (41 percent among those with incomes below 200% FPL versus 21 percent among those with incomes at or above 400% FPL). These rates did not change significantly between 2003 and 2011-12.

Exhibit 5.
Obesity Prevalence by Income (as percent of FPL), Adults 18 Years and Over, California, 2003 and 2011-12



Source: 2003 and 2011-12 California Health Interview Surveys

* Indicates significant difference from 2003; $p < 0.05$.

Among California adults, the prevalence of obesity was higher among American Indians, African-Americans, and Latinos than among whites, and the prevalence was lower among Asians than whites (Exhibit 6). Although all racial/ethnic groups experienced increases in adult obesity prevalence between 2001 and 2011-12, increases were statistically significant among Latinos, whites, African-Americans, and Asians.


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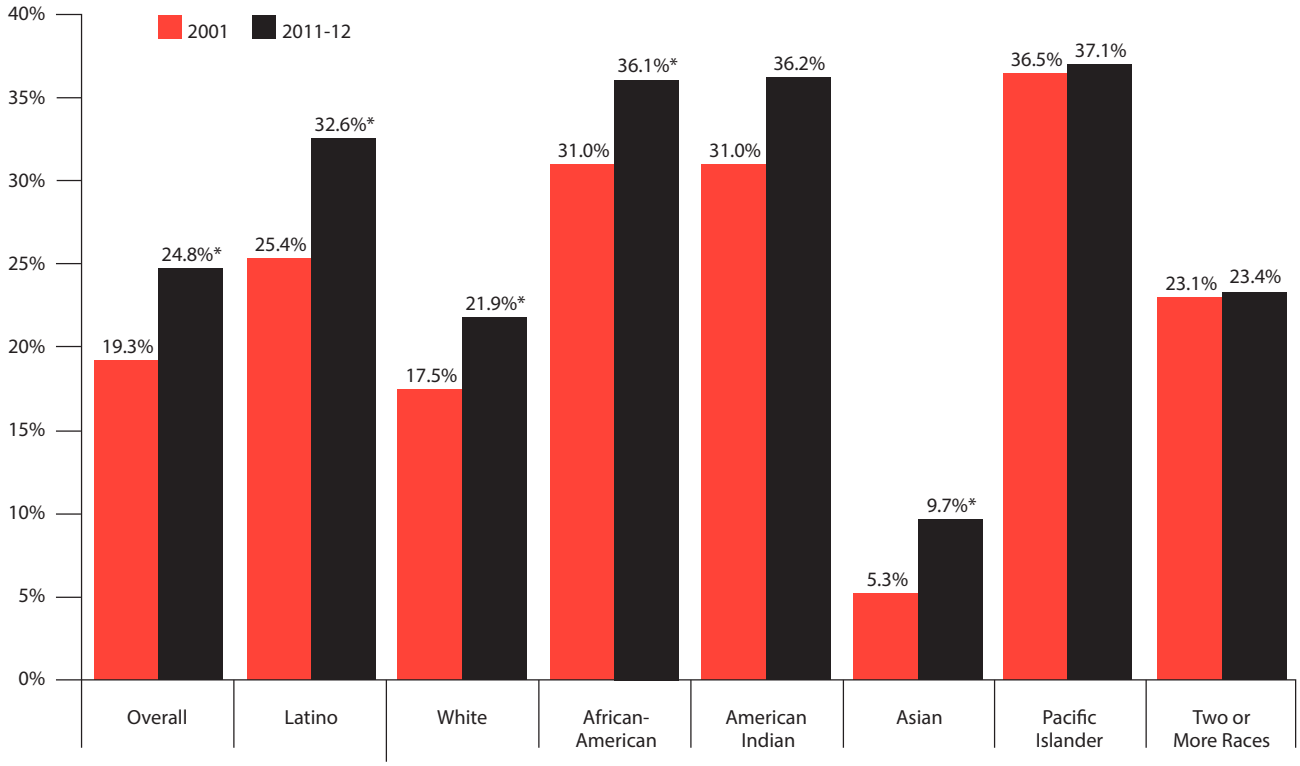
Exhibit 6.
Obesity Prevalence by Race/Ethnicity, Adults 18 Years and Over, California, 2001 and 2011-12



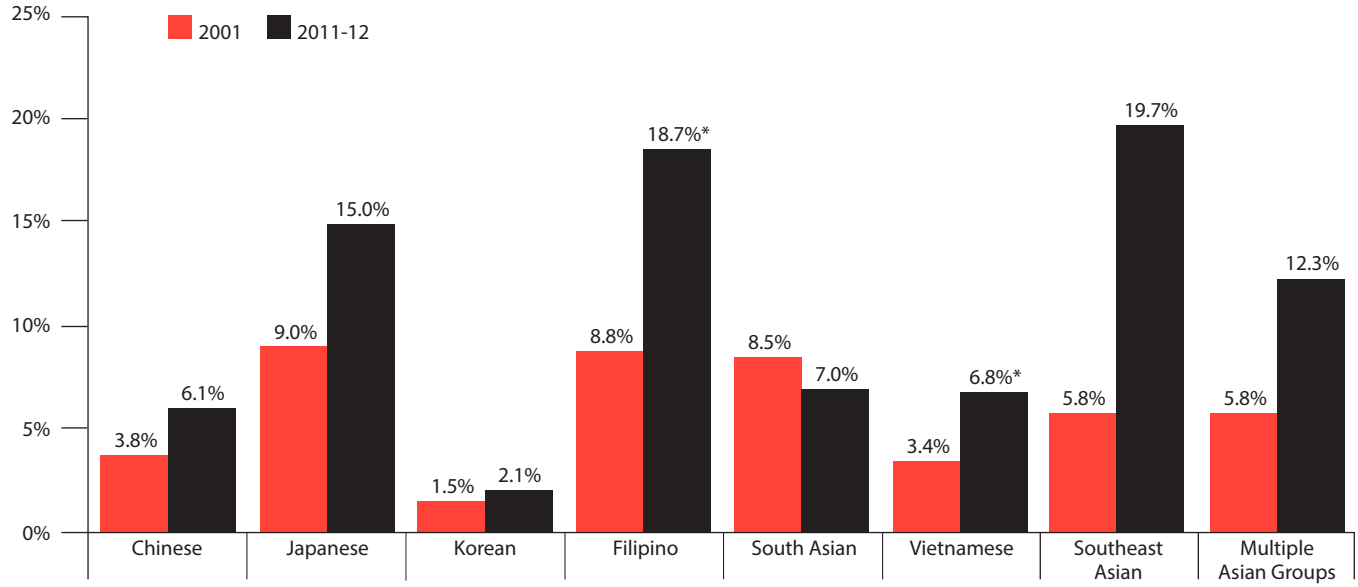
Source: 2001 and 2011-12 California Health Interview Surveys

* Indicates significant difference from 2001; $p < 0.05$.

Changes from 2001 to 2011-12 may not be statistically significant in some groups due to small sample size.

Obesity prevalence varied considerably, however, among Asian and Latino ethnic groups. Among Asians, obesity prevalence varied from 2 percent among Koreans to 20 percent among Southeast Asians (Exhibit 7). Among Latinos, the prevalence of obesity varied from 15 percent among South Americans to 34 percent among Mexicans (Exhibit 8).

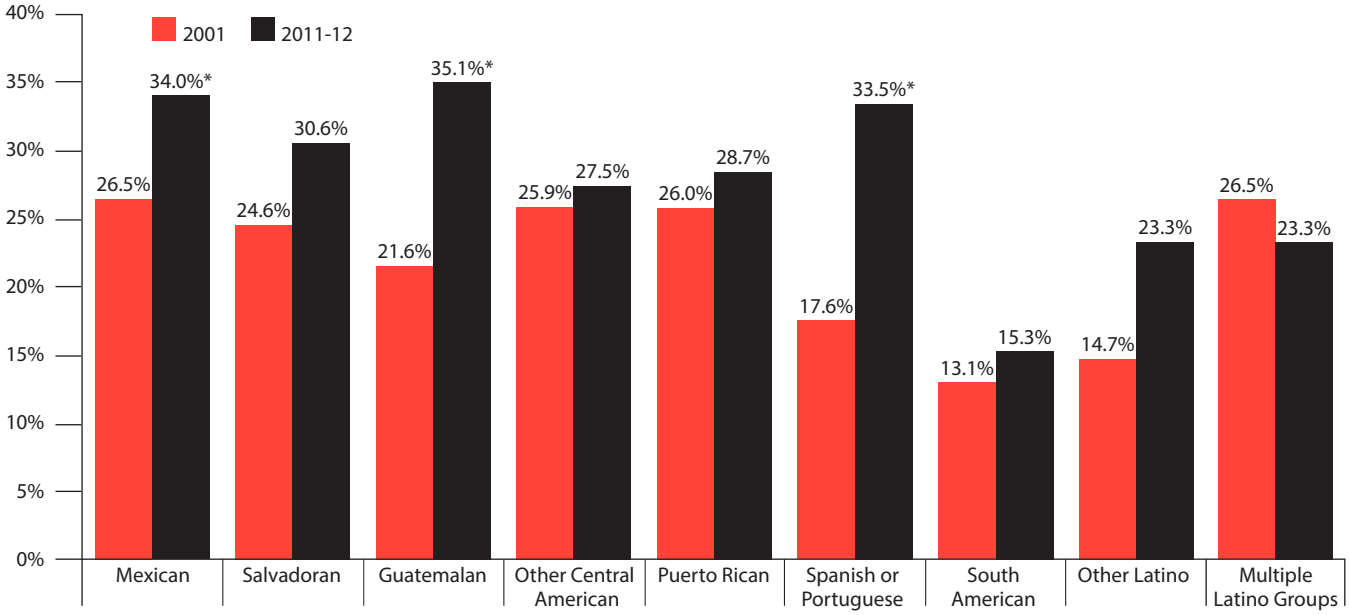
Exhibit 7.
Obesity Prevalence by Asian Ethnic Groups, Adults 18 Years and Over, California, 2001 and 2011-12



Source: 2001 and 2011-12 California Health Interview Surveys

* Indicates significant difference from 2001; $p < 0.05$.

Exhibit 8.
Obesity Prevalence by Latino or Hispanic Ethnic Groups, Adults Age 18 Years and Over, California, 2001 and 2011-12



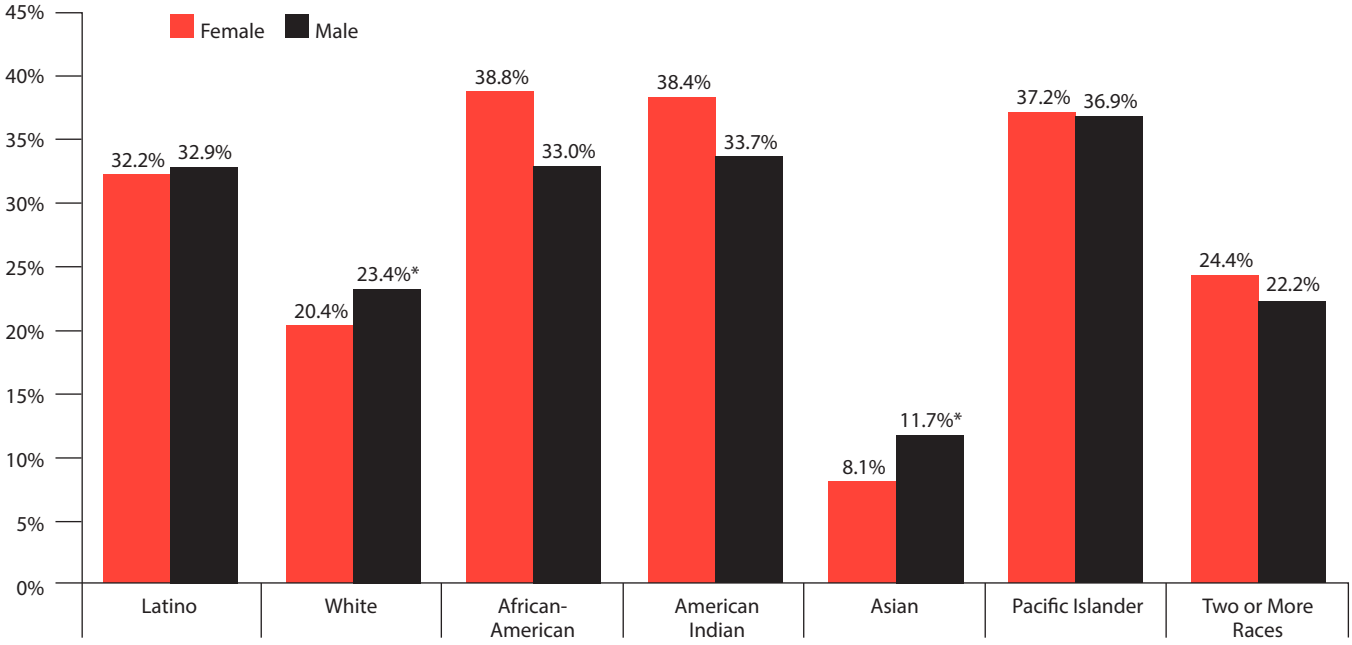
Source: 2001 and 2011-12 California Health Interview Surveys

* Indicates significant difference from 2001; $p < 0.05$.

Prevalence of Obesity Varies by Gender within Racial/Ethnic Groups

There was a small but statistically significant difference in the prevalence of obesity between adult men (26 percent) and women (24 percent) in California. However, there were differences across genders within certain racial/ethnic groups. White and Asian males had a higher prevalence of obesity than their female counterparts (Exhibit 9). In other racial/ethnic groups, males had a lower prevalence of obesity than women, but these differences were not statistically significant.

Exhibit 9.
Obesity Prevalence by Race and Gender, Adults 18 Years and Over, California, 2011-12



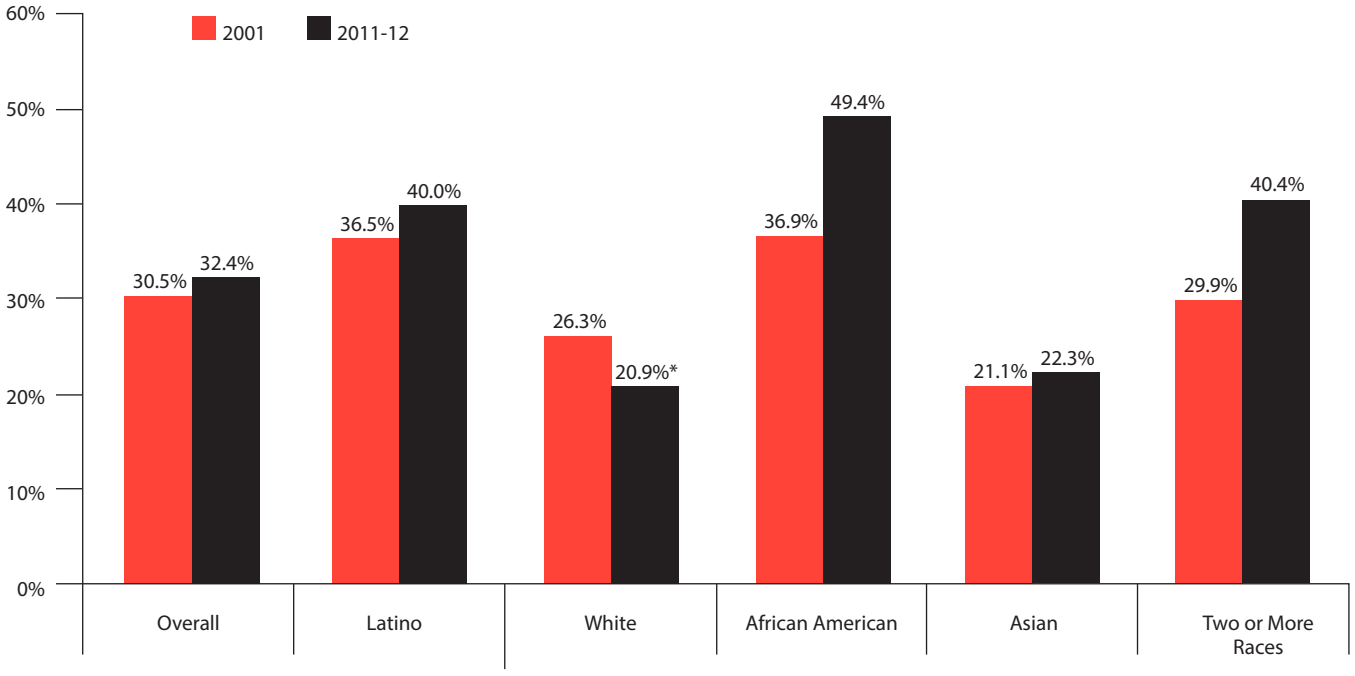
Source: 2011-12 California Health Interview Survey

* Indicates significant difference between male and female; $p < 0.05$.

Among California adolescents, the prevalence of overweight and obesity was higher among African-Americans, Latinos, and those who identified with two or more races than among whites (Exhibit 10). White adolescents had the lowest prevalence of overweight and obesity compared to all other racial/ethnic groups. In addition, white adolescents were the only group with a significant change in overweight/obesity between 2001 and 2011-12 — the prevalence of overweight and obesity decreased from 26 percent to 21 percent. All other racial/ethnic groups had similar or higher rates in 2011-12 than in 2001.

Higher rates of obesity among low-income groups and people of color are related to disparities in physical activity and dietary behaviors. For example, data from CHIS 2011-12 show that Latinos, African-Americans, and low-income adults are more likely to regularly consume fast food and soda and less likely to consume the recommended amounts of fruits and vegetables. In addition, these same groups are less physically active. These disparities in health behaviors are driven by inequities in access to safe and healthy environments, including healthy foods, and access to safe parks. According to data from CHIS 2011-12, Latinos, African-Americans, and low-income adults are more likely to report their neighborhoods are unsafe and that fresh fruits and vegetables are not affordable. Addressing these disparities will require removing obstacles to physical activity and increasing access to healthy, affordable foods. The next sections of this report describe data on health behaviors followed by data on environmental factors related to obesity and its risk factors.

Exhibit 10.
Overweight/Obesity Prevalence by Race/Ethnicity, Adolescents Ages 12 -17, California, 2001 and 2011-12



Source: 2001 and 2011-12 California Health Interview Surveys

* Indicates significant difference from 2001; p< 0.05.

Diet and Physical Activity Related to Obesity

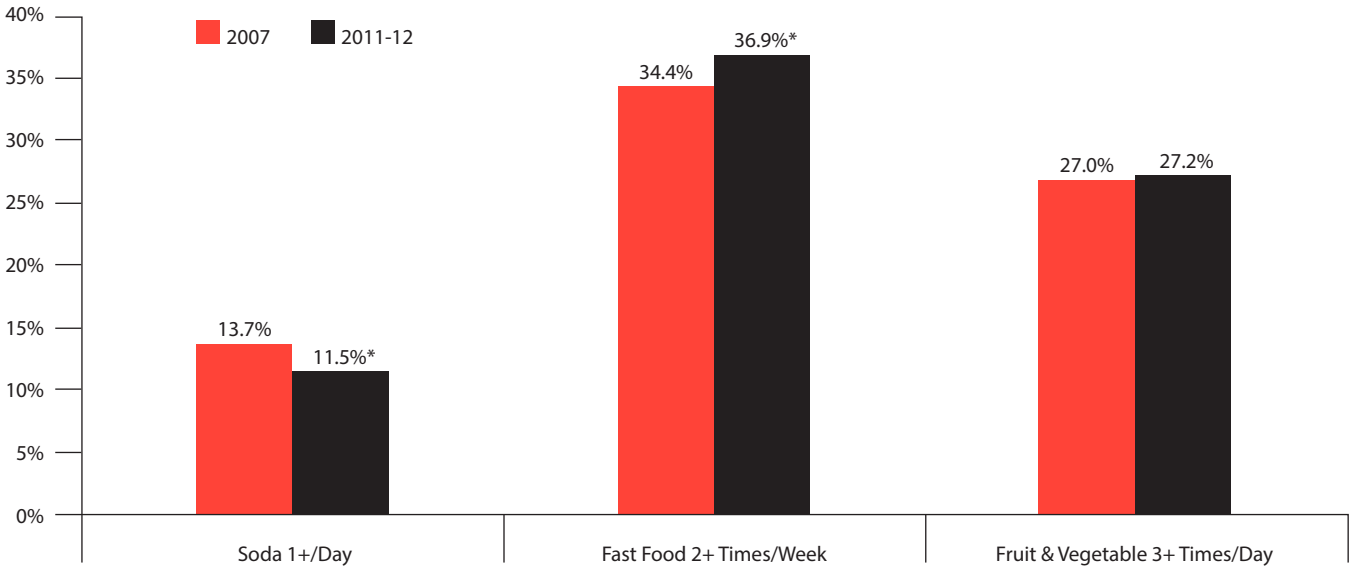
Higher Obesity Among Individuals Who Consume More Fast Food, Soda, and Fewer Fruits and Vegetables

Consumption of fast food and sugar-sweetened beverages (SSB) such as soda has been linked to higher calorie intake, lower dietary quality, and weight gain. In contrast, fruits and vegetables are low in calories and rich in vitamins, minerals, and fiber. Increased consumption of fruits and vegetables is associated with a reduced risk of health conditions such as obesity, diabetes, cancer, and cardiovascular disease.

Nearly 12 percent of adults in California consumed soda at least once per day and 37 percent of adults consumed fast food two or more times per week (Exhibit 11) in 2011-12. Estimates of adult soda consumption do not include other types of SSB such as sweetened fruit drinks, sweetened teas, sweetened coffee drinks, and sports and energy drinks because this information was not collected in CHIS 2011-12. When these beverages are included, adult consumption of sugary beverages is considerably higher—44 percent of adults drank one or more of these beverages daily in 2009 (based on CHIS 2009 data). While soda consumption decreased slightly from 2007 to 2011-12, fast food consumption increased. Fruit and vegetable consumption has not changed since 2007, with only 27 percent of adults eating fruits and vegetables three or more times per day.

These dietary behaviors varied by income and race/ethnicity and likely contributed to observed disparities in obesity rates. Low-income adults were less likely than more affluent adults to eat fruits and vegetables, but they were more likely to consume fast food and soda. In 2011-12, only 23 percent of adults living below the FPL ate fruits and vegetables at least

Exhibit 11.
Dietary Behaviors, Adults 18 Years and Over, California, 2007 and 2011-12



Source: 2007 and 2011-12 California Health Interview Surveys

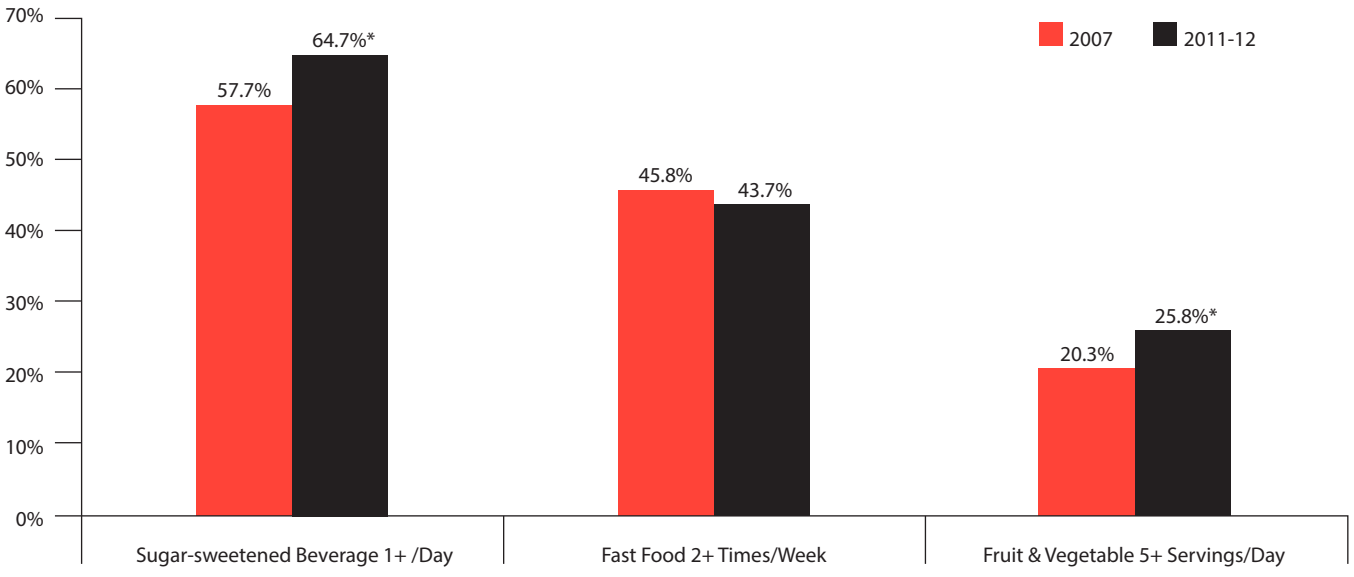
* Indicates significant difference from 2007; $p < 0.05$.

Note: estimates of soda consumption do not include other types of SSB.

three times per day compared to 32 percent of higher income adults. In addition, rates of fast food and soda consumption were higher among adults living in poverty (39 percent and 20 percent, respectively), compared to those with incomes four times the FPL (33 percent and 6 percent for fast food and soda, respectively). White adults were more likely than Latino or African-American adults to eat fruits and vegetables, and they were less likely to consume soda or fast food. Nearly one third of white adults (32 percent) ate fruits and vegetables at least three times per day compared to just 21 percent of Latinos and African-Americans. In addition, Latinos and African-Americans had higher rates of fast food consumption than whites (45 percent, 47 percent, and 32 percent, respectively, ate fast food at least two times per week). A similar pattern was seen with soda consumption.

Since 2007, adolescents experienced different changes in dietary behavior compared to adults. SSB consumption among teens increased significantly from 58 percent consuming at least one SSB per day in 2007 to 65 percent consuming at least one SSB per day in 2011-12 (Exhibit 12). There was no significant change in fast food consumption since 2007. Adolescents increased their fruit and vegetable consumption from 20 percent consuming five or more servings per day in 2007 to 26 percent consuming five or more servings per day in 2011-12.

Exhibit 12.
Dietary Behaviors, Adolescents Ages 12 – 17, California, 2007 and 2011-12



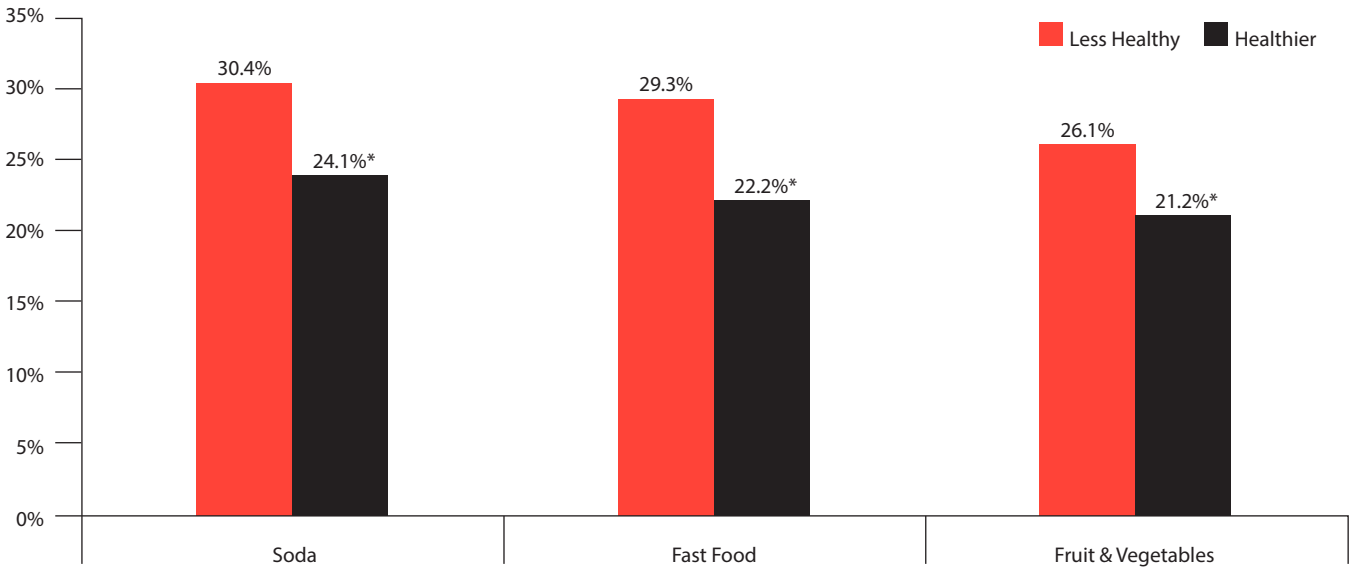
Source: 2007 and 2011-12 California Health Interview Surveys

* Indicates significant difference from 2007; $p < 0.05$.

Obesity prevalence was higher among adults who ate fewer fruits and vegetables and consumed more fast food and soda (Exhibit 13). A higher proportion of adults who consumed soda daily and fast food two or more times per week were obese (30 percent and 29 percent, respectively) compared to those who consumed these items less often (24 percent and 22 percent, respectively). Similarly, adults who consumed fewer fruits and vegetables were more likely to be obese than those who ate fruits and vegetables more often (26 percent versus 21 percent).

In addition, adults who consumed more soda and fast food and fewer fruits and vegetables were more likely to be obese than those with healthier dietary behaviors, even when adjusting for age, gender, race, income, physical activity, affordability of fresh produce, neighborhood safety, and neighborhood cohesion. While the prevalence of overweight and obesity was higher among adolescents who consumed more soda and fast food and less fruits and vegetables than those with healthier dietary behaviors, these differences were not statistically significant.

Exhibit 13.
Obesity Prevalence by Dietary Behaviors, Adults 18 Years and Over, California, 2011-12



Source: 2007 and 2011-12 California Health Interview Surveys

* Indicates significant difference from "Less Healthy"; $p < 0.05$.

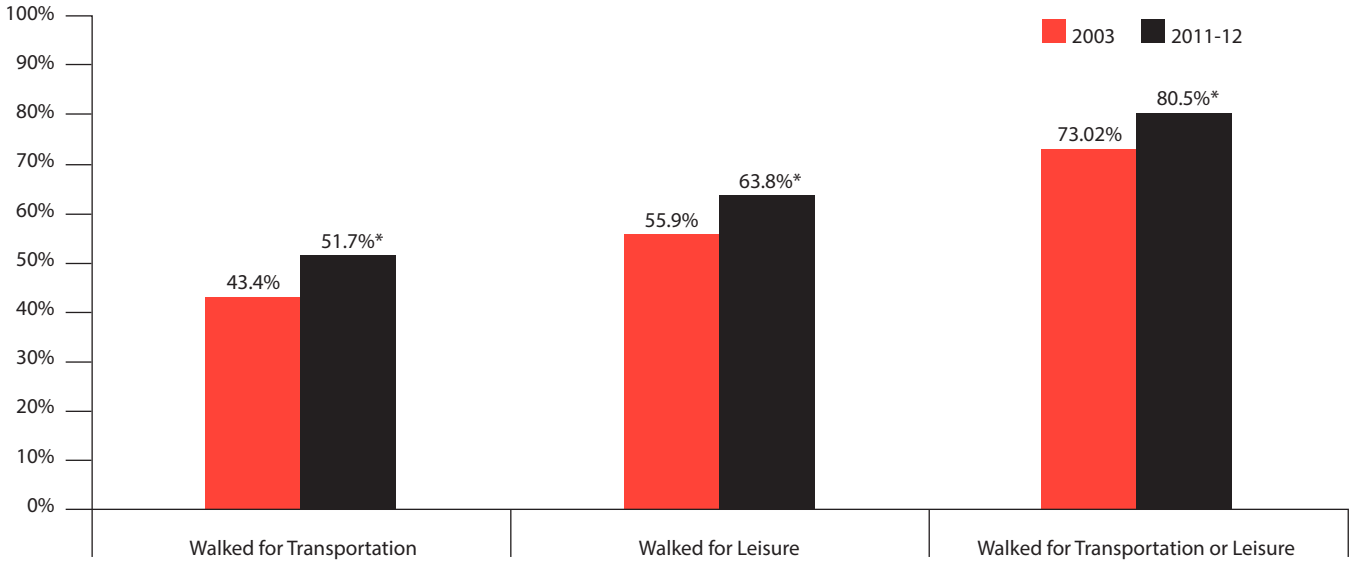
Note: The term "Less Healthy" refers to consuming soda one or more times per day, fast food two or more times per week, and fruits and vegetables less than three times per day. The term "Healthier" refers to consuming soda less than once per day, fast food fewer than twice per week, and fruits and vegetables three or more times per day.

Physical Activity

Physical activity is associated with the prevention of obesity and chronic conditions, such as diabetes, heart disease, osteoporosis, some types of cancer, and premature death.[16,17] Walking is a moderate-intensity physical activity that provides significant health benefits. People walk for transportation (to get somewhere, for example) or leisure (for relaxation, exercise, as a social activity, or to walk a dog). Although adults may exercise in a variety of ways — through sports, fitness programs, or on the job — walking is the most common form of physical activity among adults, and it is an important component in overall levels of physical activity.[18]

In 2011-12, 52 percent of adults walked for transportation, 64 percent walked for leisure, and 81 percent walked for either purpose (Exhibit 14). There were increases in all types of walking since 2003. The proportion of adults walking for transportation increased from 43 percent to 52 percent, and walking for leisure increased from to 56 percent to 64 percent. Walking for leisure varied by income with 69 percent of higher-income adults walking for leisure compared to 59 percent of adults below 100% FPL. Low-income adults were more likely to walk for transportation, however, than higher-income adults (59 percent versus 50 percent, respectively).

Exhibit 14.
Prevalence of Walking for Transportation or Leisure, Adults 18 Years and Over, California, 2003 and 2011-12



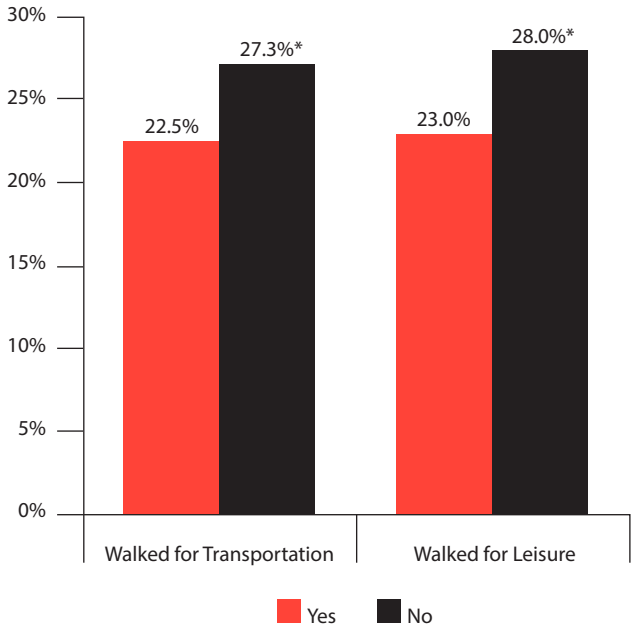
Source: 2003 and 2011-12 California Health Interview Surveys

* Indicates significant difference from 2003; $p < 0.05$.

Higher Obesity Prevalence Among Adults Who Did Not Walk for Transportation or Leisure

Walking was related to lower levels of obesity. Adults who walked for transportation or leisure were less likely to be obese than those who do not. Twenty-three percent of adults who walked for transportation were obese compared to 27 percent who did not walk for transportation (Exhibit 15). A similar pattern was seen among adults who walked for leisure. In addition, adults who walked for transportation or leisure were less likely to be obese than adults who reported not walking, even when adjusting for age, gender, race, income, dietary behaviors, affordability of fresh produce, neighborhood safety, and neighborhood cohesion.

Exhibit 15.
Obesity Prevalence by Walking, Adults 18 Years and Over, California, 2011-12



Source: 2011-12 California Health Interview Survey

* Indicates significant difference from "Yes"; $p < 0.05$.

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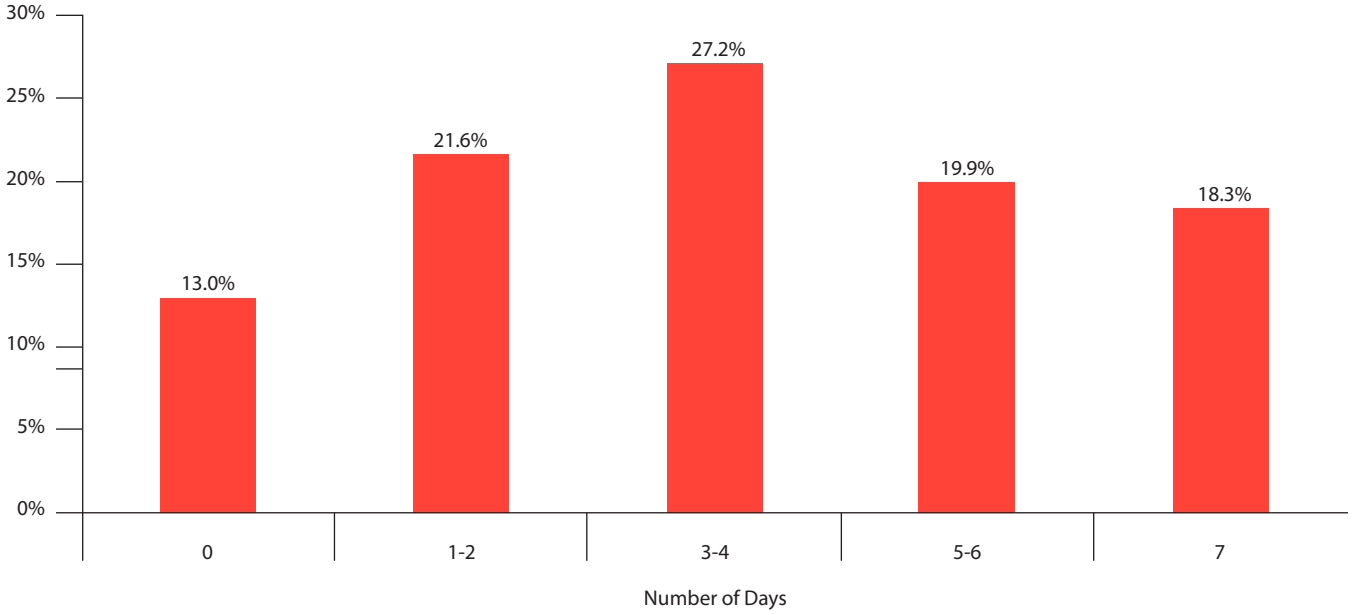
Adolescent Physical Activity

Regular physical activity is also important for youths to maintain health and prevent obesity, as well as to facilitate healthy behaviors throughout their lifetimes.[19,20] The US Department of Health and Human Services recommends at least 60 minutes of daily physical activity for youths. Only 18 percent of adolescents met the recommended one hour of daily physical activity in 2011-12 (Exhibit 16). Nearly two-thirds (62 percent) of adolescents engaged in physical activity less than five times per week, with 13 percent not reaching an hour of physical activity on any days. The level of physical activity among adolescents did not change significantly between 2005 and 2011-12.

Exhibit 16.
Percent Physically Active for At Least 60 Minutes per Day by Number of Days per Week, Adolescents Ages 12 to 17, California, 2011-12



Source: 2011-12 California Health Interview Survey

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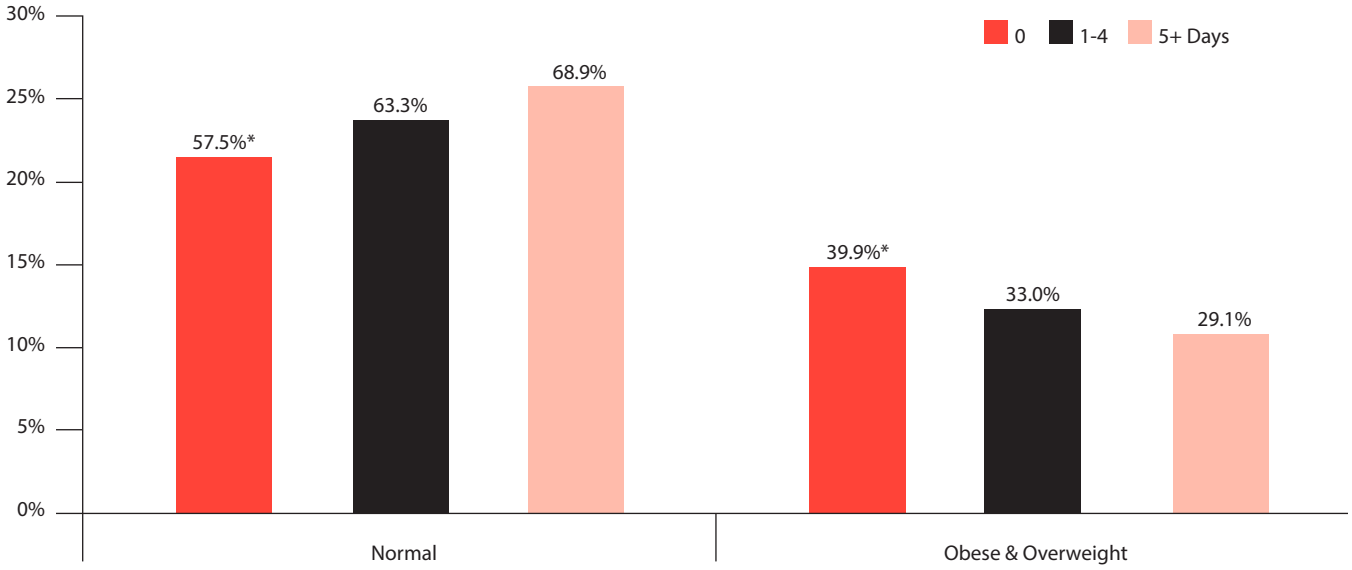
The percent of adolescents who were physically active for at least an hour on five or more days in the past week varied with income and race/ethnicity. Less than one-third (31 percent) of adolescents with family incomes below 100% FPL were physically active at least five times per week compared to 43 percent of more affluent adolescents. In addition, 44 percent of white adolescents achieved this level of physical activity compared to 36 percent of Latinos and 34 percent of African-Americans.

Among California adolescents, those who were less physically active were more likely to be obese. Forty percent of adolescents who were not physically active for at least 60 minutes on any days were obese compared to 29 percent who were physically active on five or more days per week (Exhibit 17). Similarly, 69 percent of teens who engaged in physical activity on five or more days per week were normal weight compared to only 58 percent who had no days with at least an hour of physical activity.

Exhibit 17.
Prevalence of Normal Weight and Overweight/Obesity by Days per Week with At Least 60 Minutes of Physical Activity, Adolescents Ages 12 to 17, California, 2011-12



Source: 2011-12 California Health Interview Survey

* Indicates significant difference from 5+ Days of Physical Activity per Week; $p < .05$.

Environmental Indicators

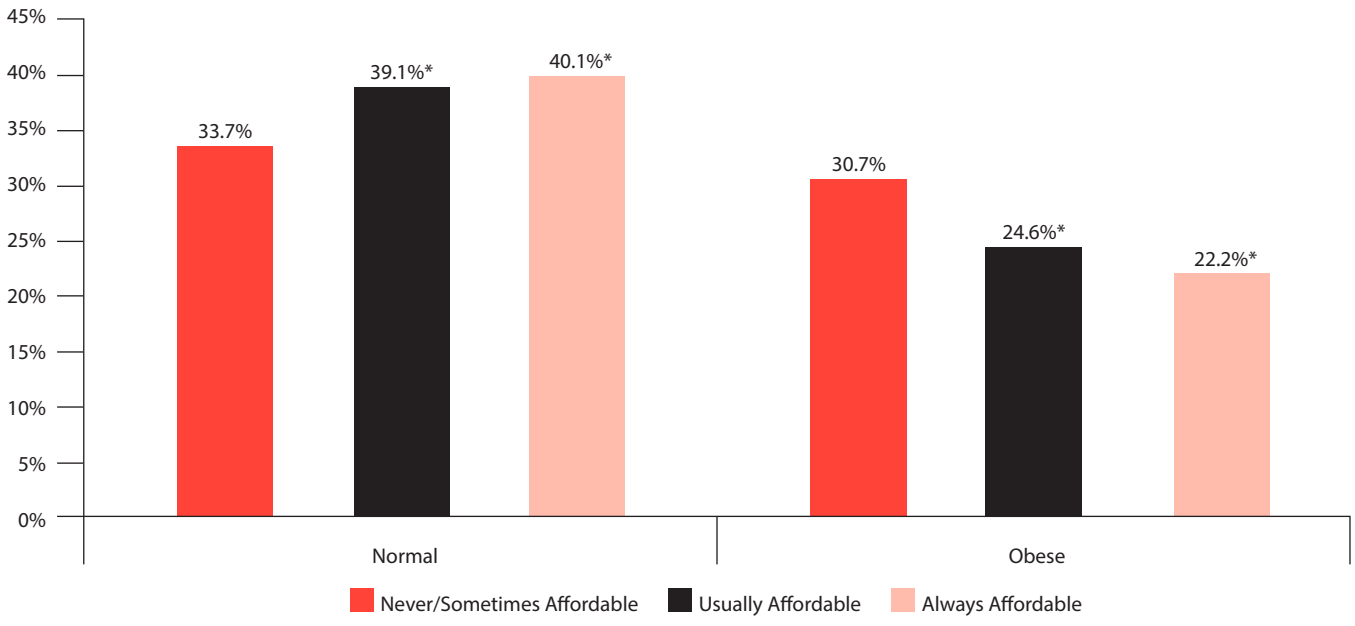
Affordability of Fresh Produce Linked to Obesity

The neighborhood environment influences individual health behaviors, including physical activity and dietary behaviors, and it can also impact obesity. For example, existing research suggests that greater access to fresh produce is associated with higher fruit and vegetable intake. Based on this information, national, state, and local policymakers have recommended increasing the availability of fresh fruits and vegetables as a means of improving dietary intake and health. In 2011-12, 78 percent of California adults reported always having fresh produce available in their neighborhood compared to 22 percent who reported usually, sometimes, or never having fresh fruits and vegetables available.

Fresh produce is unlikely to be purchased and consumed if it is not affordable, even when it is readily available. In 2011-12, among adults who had access to fresh fruits and vegetables, approximately one out of five (21 percent) reported they were never or only sometimes affordable, and less than half (49 percent) reported fresh fruits and vegetables were always affordable. Reported affordability of fresh fruits and vegetables varied considerably by race and income. Only 11 percent of higher-income adults reported that fresh produce was not affordable in their neighborhood compared to 31 percent of adults with incomes below 100% FPL. In addition, more than one-quarter of Latinos (28 percent) and African-Americans (27 percent) reported that fresh produce was not affordable in their neighborhood compared to just 14 percent of whites.

Obesity prevalence was higher among adults who reported fruits and vegetables were never or only sometimes affordable (31 percent) compared to those who reported always having affordable fresh produce in their neighborhoods (22 percent) (Exhibit 18). In addition, adults who report fresh produce is not affordable in their neighborhood were more likely to be obese than adults who reported fresh produce was always affordable, even when adjusting for age, gender, race, income, dietary behaviors, and physical activity.

Exhibit 18.
Prevalence of Normal Weight and Obesity by Affordability of Fresh Produce in Neighborhood, Adults 18 Years and Over, California, 2011-12



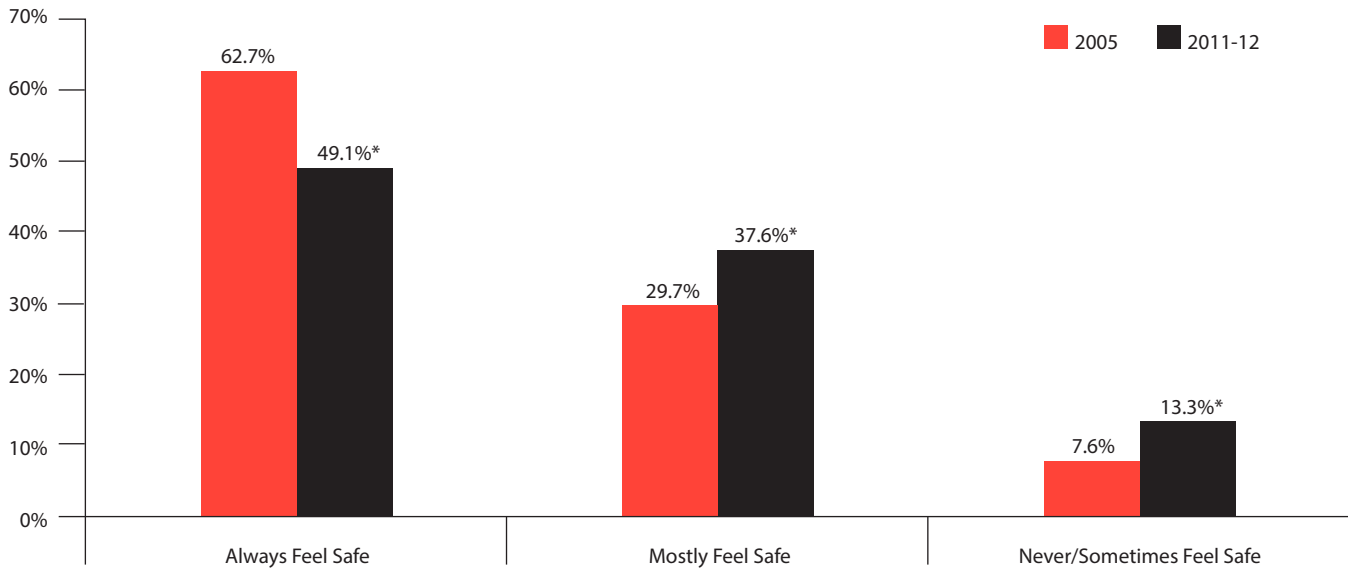
Source: 2011-12 California Health Interview Survey

* Indicates significant difference from Never/Sometimes Affordable; $p < 0.05$.

Neighborhood Safety Impacts Obesity and Physical Activity

The extent to which people feel safe in their neighborhoods can impact health in a number of ways. For example, lack of safety can hinder physical activity and increase stress. In California in 2011-12, less than half (49 percent) of adults always felt safe in their neighborhoods and 13 percent never or only sometimes felt safe (Exhibit 19). Perceptions of neighborhood safety have decreased considerably since 2005, when 63 percent of adults reported always feeling safe in their neighborhood. In addition, low-income adults, Latinos, and African-Americans were much more likely to report their neighborhoods were not safe. The percent of low-income adults who reported their neighborhood was not safe was more than five times as high as the percent of higher income adults (28 percent versus 5 percent, respectively). More than one in five Latinos (22 percent) and 18 percent of African-Americans reported their neighborhoods were not safe compared to just 7 percent of whites.

Exhibit 19.
Perceptions of Neighborhood Safety, Adults 18 Years and Over, California, 2005 and 2011-12

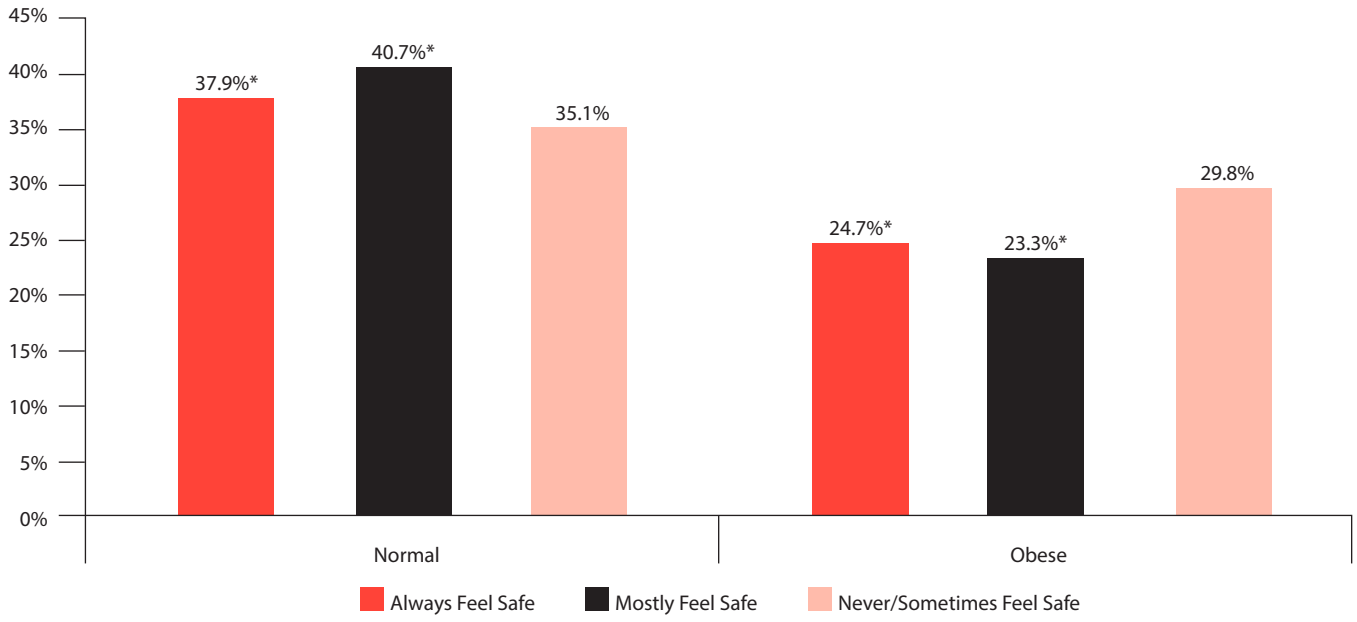


Source: 2005 and 2011-12 California Health Interview Surveys

* Indicates significant difference from 2005; $p < 0.05$.

Perceived neighborhood safety was associated with a lower prevalence of obesity and more walking for leisure among California adults. Nearly one-third (30 percent) of adults who felt unsafe in their neighborhoods were obese compared to one-quarter (25 percent) of those who always felt safe in their neighborhoods (Exhibit 20). In addition, adults who reported their neighborhood was safe were less likely to be obese than adults who reported their neighborhood was not safe, even when adjusting for age, gender, race, income, dietary behaviors, and physical activity.

Exhibit 20.
Body Mass Index by Perceptions of Neighborhood Safety, Adults Age 18 and Over, California, 2011-12

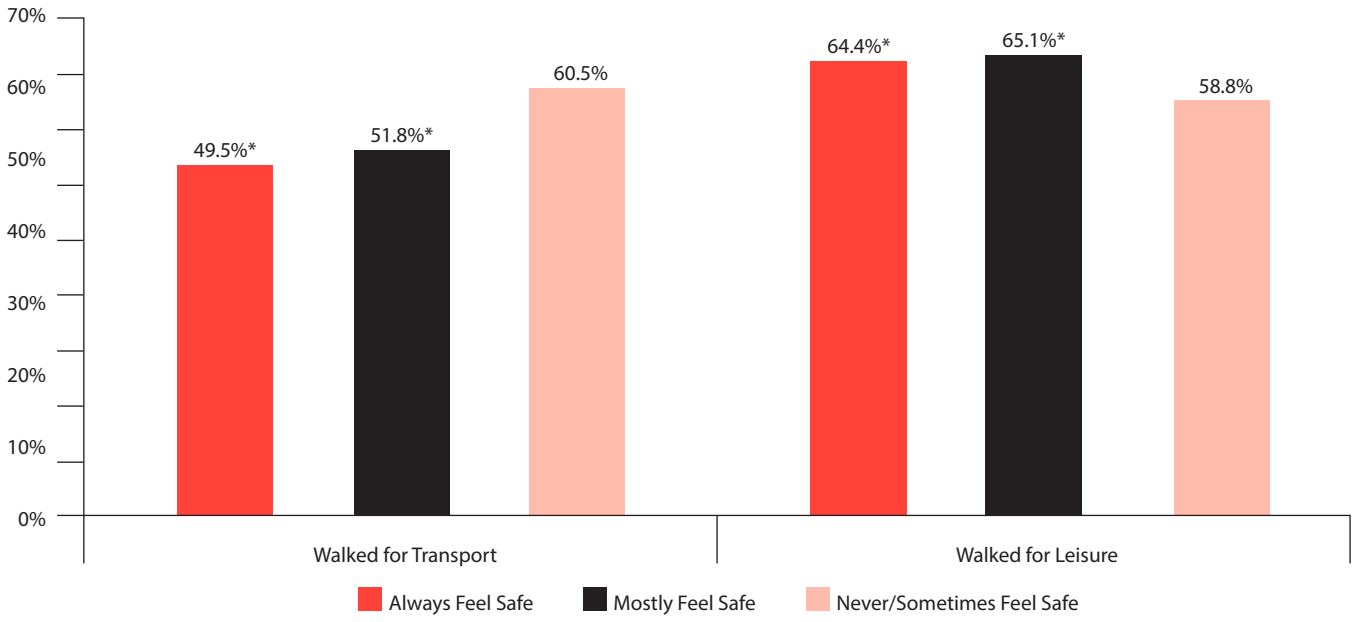


Source: 2011-12 California Health Interview Survey

* Indicates significant difference from Never/Sometimes Feel Safe; $p < 0.05$.

Perceptions of neighborhood safety were also related to walking among adults in 2011-12 (Exhibit 21). The prevalence of walking for leisure was higher among adults who felt safe all of the time (64 percent) or most of the time (65 percent) than among those who felt safe some or none of the time (59 percent). However, the prevalence of walking for transportation showed the opposite relationship with 60 percent walking for transportation among those who felt safe some or none of time compared to approximately 50 percent among those who felt safe most or all of the time. These results likely reflect differences in why people walk for leisure (i.e., because they want to walk) or transportation (because they need to walk). They may also reflect differences in income levels between neighborhoods perceived as safe versus unsafe.[21]

Exhibit 21.
Walked for Transportation or Leisure by Neighborhood Safety, Adults 18 Years and Over, California, 2011-12

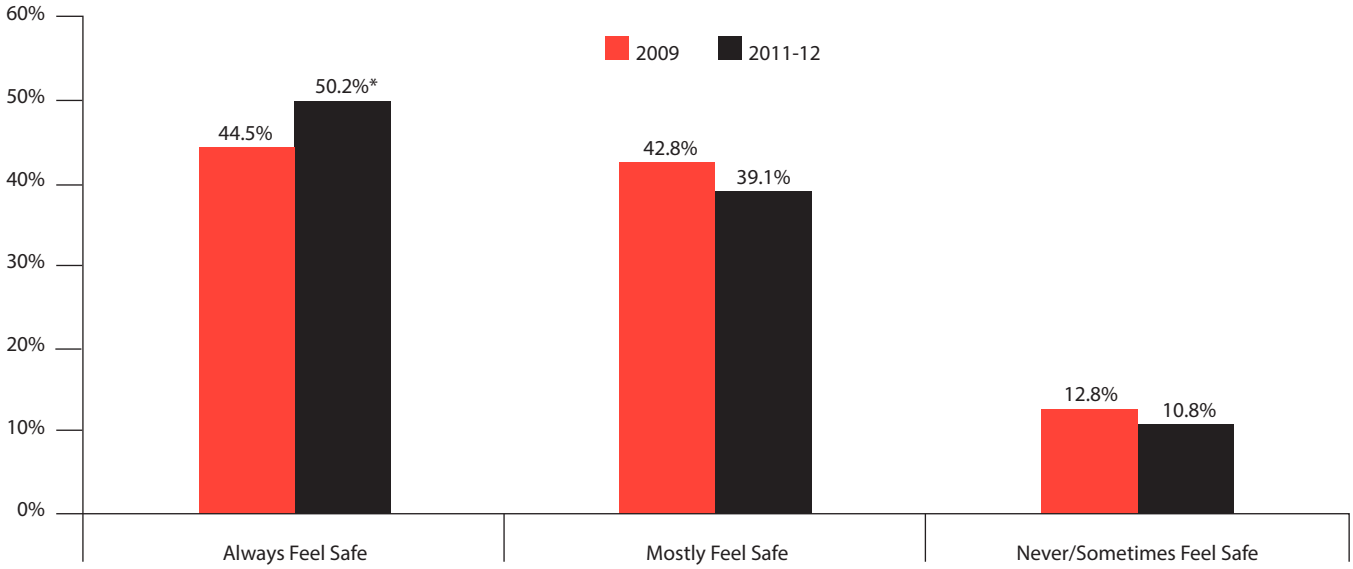


Source: 2011-12 California Health Interview Survey

* Indicates significant difference from Never/Sometimes Feel Safe; $p < 0.05$.

In 2011-12, half of adolescents in California always felt safe in their neighborhoods, up from 45 percent in 2009. Despite this increase, nearly 350,000 adolescents (11 percent) reported feeling safe only some or none of the time (Exhibit 22). Perceptions of neighborhood safety were related to overweight and obesity among adolescents. More than 40 percent of adolescents who lived in neighborhoods where they sometimes or never felt safe were overweight or obese compared to less than 30 percent among those who always felt safe in their neighborhoods (Exhibit 23). In addition, adolescents who reported their neighborhood was safe were less likely to be obese than those who reported their neighborhood was not safe, even when adjusting for age, gender, race, income, and physical activity.

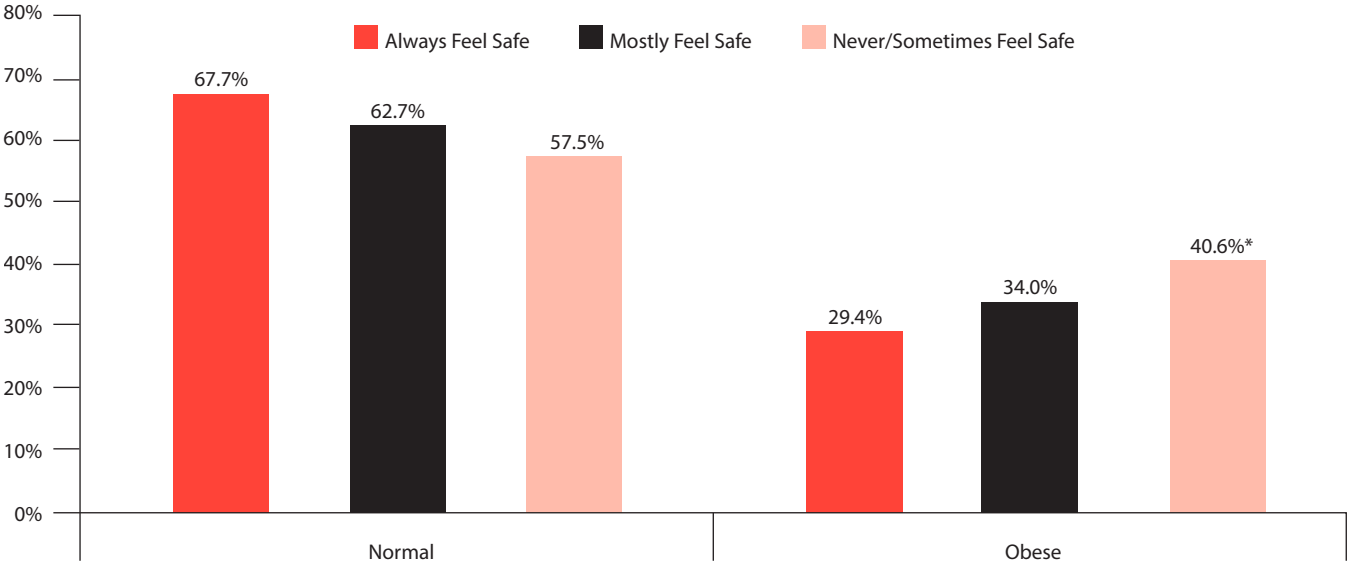
Exhibit 22.
Perceptions of Neighborhood Safety, Adolescents Ages 12-17, California, 2009 and 2011-12



Source: 2009 and 2011-12 California Health Interview Surveys

* Indicates significant difference from 2009; $p < 0.05$.

Exhibit 23.
Body Mass Index by Perceptions of Neighborhood Safety, Adolescents Ages 12-17, 2011-12



Source: 2011-12 California Health Interview Survey

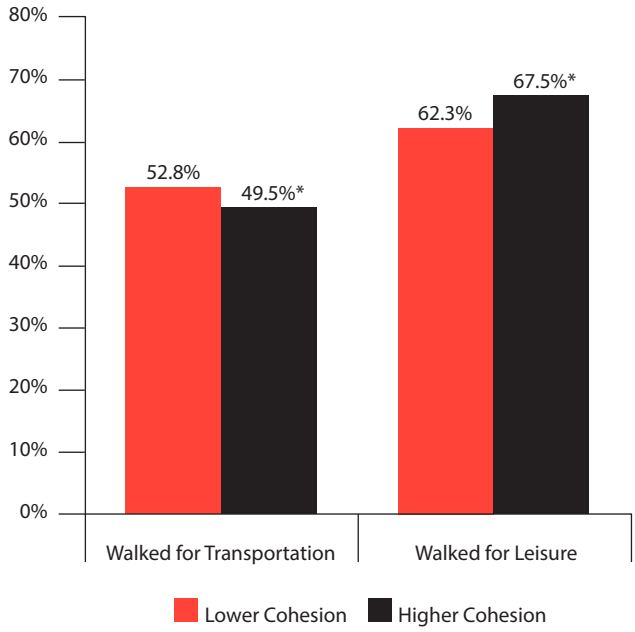
* Indicates significant difference from Always feel safe; $p < 0.05$.

Social Cohesion Impacts Obesity and Physical Activity

Social cohesion is an indicator of connectedness and solidarity among groups in society. It is measured by the extent to which people trust and are willing to help others, share values, and get along with their neighbors. Statewide, 70 percent of adults lived in neighborhoods with low social cohesion in 2011-12. However, social cohesion varied with race/ethnicity and income. Three-quarters of Latinos (79 percent) and African-Americans (73 percent) lived in neighborhoods with low social cohesion compared to 61 percent of whites. In addition, 81 percent of low-income adults lived in neighborhoods with low social cohesion compared with 61 percent of higher-income adults.

Adults who lived in neighborhoods with higher social cohesion walked more for leisure compared to those in neighborhoods with lower social cohesion (68 percent versus 62 percent, respectively). However, the opposite is true for walking for transportation (Exhibit 24). Social cohesion was also related to obesity. The prevalence of obesity was higher (26 percent) among adults who reported lower social cohesion than it was among adults who reported higher cohesion (22 percent) (Exhibit 25). In addition, adults who report higher social cohesion were less likely to be obese than adults with lower social cohesion, even when adjusting for age, gender, race, income, dietary behaviors, and physical activity.

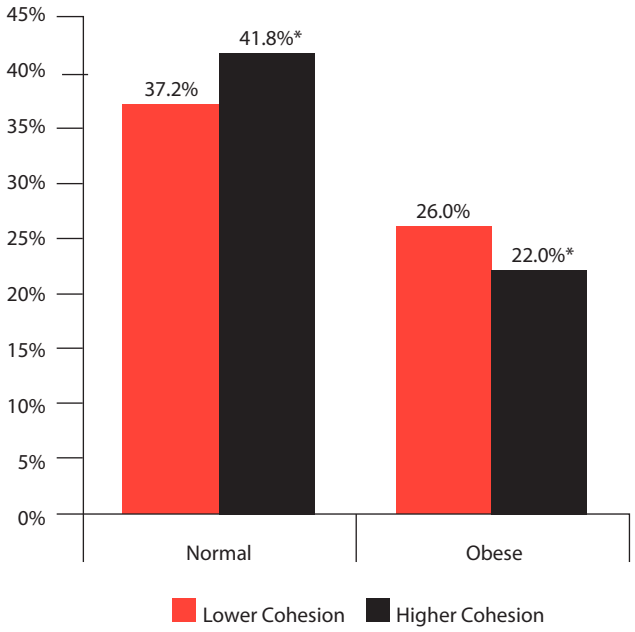
Exhibit 24.
Walked for Transportation or Fun by Social Cohesion, Adults 18 Years and Over, California, 2011-12



Source: 2011-12 California Health Interview Survey

* Indicates significant difference from Lower Cohesion; p < 0.05.

Exhibit 25.
Body Mass Index by Social Cohesion, Adults 18 Years and Over, California, 2011-12



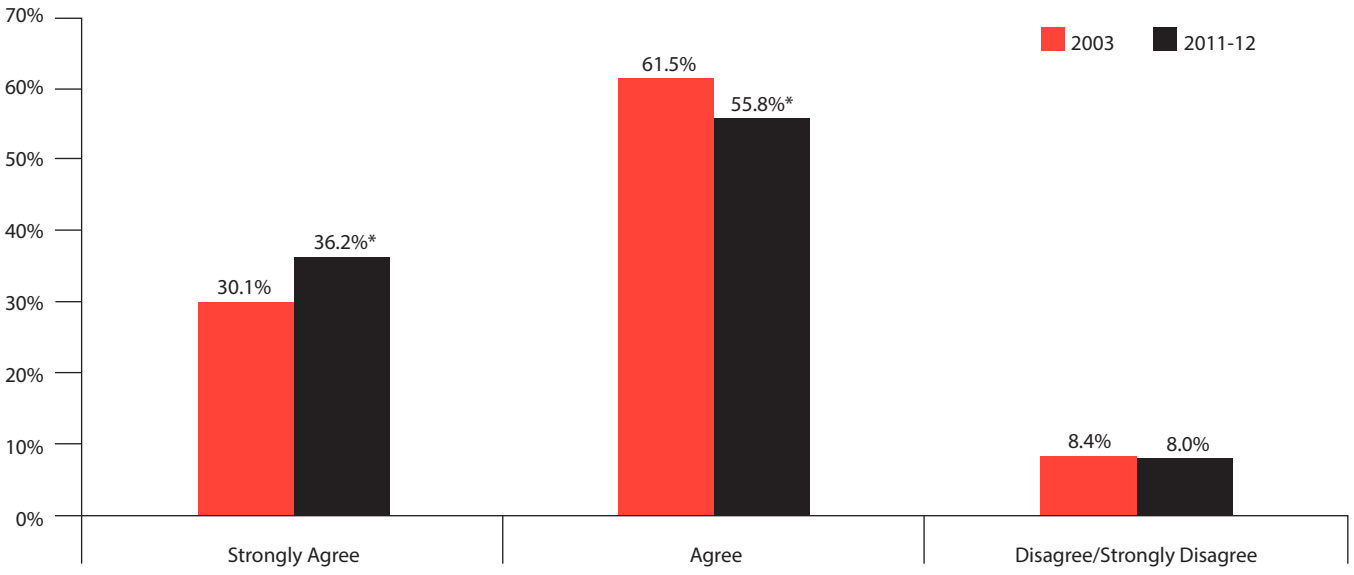
Source: 2011-12 California Health Interview Survey

* Indicates significant difference from Lower Cohesion; p < 0.05.

The Impact of Park Availability and Safety on Adolescent Obesity

Parks provide important opportunities for youth to engage in physical activity and to lead more active lifestyles. The proportion of adolescents who reported living within walking distance of a park increased from 82 percent to 87 percent between 2003 and 2011-12. Most adolescents (92 percent) agreed or strongly agreed that their nearest park was safe during the day. The proportion of adolescents that strongly agreed their park was safe during the day increased from 30 percent in 2003 to 36 percent in 2011-12, while those who disagreed or strongly disagreed their park was safe during the day remained the same (8 percent) (Exhibit 26). Reported park safety among adolescents varied by race/ethnicity and income. Latinos and low-income adolescents were less likely to strongly agree that their park was safe. Nearly half of white adolescents (47 percent) strongly agreed their park was safe during the day, almost twice as high as among Latino adolescents (24 percent). Similarly, the percent of adolescents from higher-income families who strongly agreed their park was safe was twice as high as the percent of adolescents from families with incomes below 100% FPL (48 percent versus 23 percent).

Exhibit 26.
Daytime Park Safety, Adolescents Ages 12-17, California, 2003 and 2011-12



Source: 2003 and 2011-12 California Health Interview Surveys

* Indicates significant difference from 2003; $p < 0.05$.

Perceptions of park safety were related to adolescent overweight and obesity. The prevalence of adolescent overweight and obesity was significantly higher among those who felt their park was unsafe during the day (42 percent) compared to those who reported they strongly agreed their park was safe (27 percent) (Exhibit 27). In addition, adolescents who report their neighborhood park was not safe were more likely to be obese than those who strongly agreed the park was safe, even when adjusting for age, gender, race, income, and physical activity.

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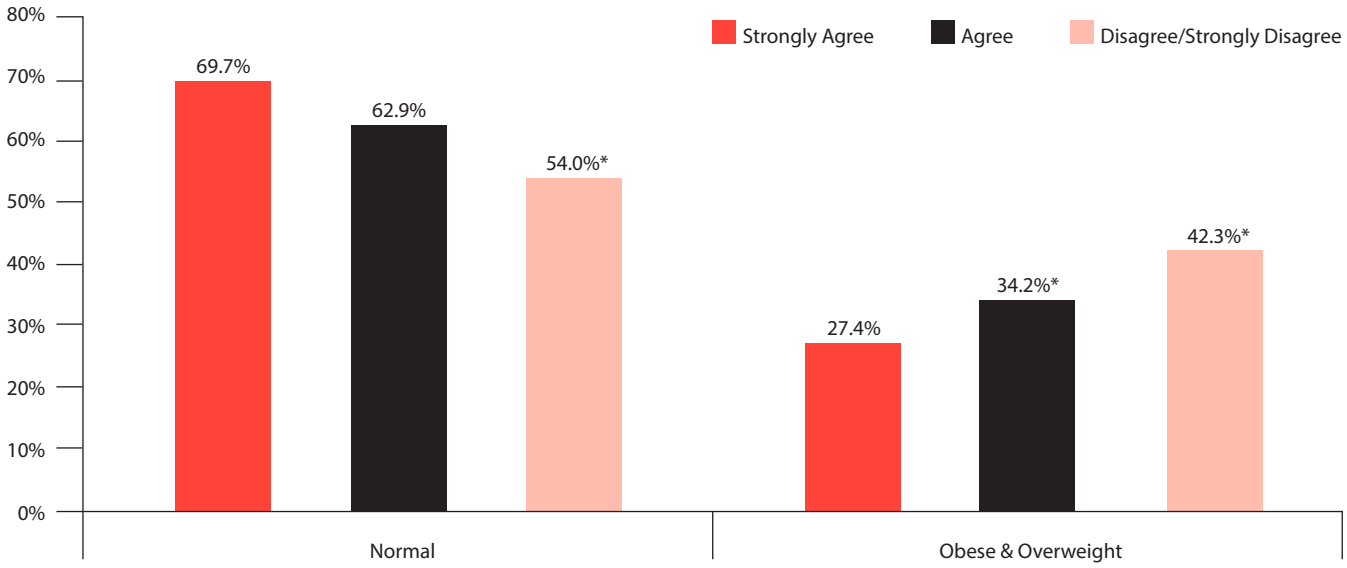
Exhibit 27.
Prevalence of Normal Weight and Overweight/Obesity by Daytime Park Safety, Adolescents Ages 12-17, 2011-12



Source: 2011-12 California Health Interview Survey

* Indicates significant difference from Strongly Agree; $p < 0.05$.

Conclusions and Recommendations

Nearly 18 million adults and adolescents in California were overweight or obese in 2011-12, including more than 7 million who were obese. Despite encouraging news nationally about obesity rates leveling off, the prevalence of obesity among California adults has continued to increase. The rate was significantly higher in 2011-12 than in 2001. Following the national trend, overweight and obesity among California adolescents has not increased significantly since 2001.

There are significant disparities in obesity prevalence with higher rates among low-income individuals, Latinos, and African-Americans. The higher rates of obesity among low-income individuals and people of color are related to disparities in physical activity and dietary behaviors. These differences in diet and physical activity, in turn, are driven by inequities in access to safe and healthy environments, including healthy foods, and access to safe parks. Changing these environments will require working with residents in disadvantaged communities to carefully develop innovative and supportive efforts that address health, social, and environmental inequities. Obesity rates were related to dietary behaviors and physical activity with higher rates among those consuming more soda and fast food, and fewer fruits and vegetables, as well as those getting less physical activity. Obesity and physical activity were also related to several modifiable neighborhood characteristics, including affordability of fresh produce, social cohesion, and neighborhood safety.

Although there are a number of factors associated with obesity, ranging from genetics to individual behaviors, the composition and structure of neighborhoods and social environments have been increasingly implicated as impediments to maintaining a healthy lifestyle. Both physical activity and healthy eating are important for preventing and reducing obesity. California has enacted a number of policy reforms intended to encourage healthy eating, including legislation requiring chain restaurants to display calorie information on menus and menu boards as well as legislation prohibiting the sale of soda and other sweetened beverages on school campuses. Additional efforts by state and local policymakers, as well as communities, to promote physical activity and healthy eating are warranted, however, given the statewide increase in the prevalence of obesity.

Recommendations include the following:

Access and Affordability of Fresh Fruits and Vegetables

The presence of farmers' markets has increased nearly five-fold over the past two decades. However, many areas lack access to farmers' markets and other sources of fresh and affordable produce. Local governments should work with community groups to bring farmers' markets, food cooperatives, and community gardens to underserved areas. Some communities, for example, have instituted innovative programs such as mini farmers' markets to increase access to fresh produce. Other communities have provided incentives for corner store conversions that allow traditional corner stores to provide a selection of fresh produce. In addition, vacant city-owned land and unused parking lots can be converted to community gardens or used as sites for farmers' markets. Efforts to promote use of food assistance benefits, such as the Supplemental Nutrition Assistance Program (SNAP, formerly known as Food Stamps) and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), to purchase fresh produce at farmers' markets can also increase affordability of fresh fruits and vegetables.[22]

Park Availability and Safety

Improving the characteristics of the places people live can have a positive impact on increasing physical activity. Increasing the availability of and access to safe spaces for physical activity is a promising strategy for encouraging more physical activity. Local governments should consider undertaking projects to improve the perceived and actual safety of parks. Policymakers should work with parks and recreation departments as well as community members to determine appropriate strategies. For example, the principles of Crime Prevention through Environmental Design suggest that making community spaces more open and reducing dark and obscured areas can prevent crime, as well as increase feelings of safety. Park administrators should also concentrate on maintenance and park aesthetics; for example, dealing with vandalism and graffiti and reducing litter may increase the use of existing parks. Increased use of parks has been shown to improve perceptions of park safety.

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Neighborhood Safety

Neighborhood safety was related to walking for leisure as well as obesity. Strategies to improve perceived and actual neighborhood safety could promote physical activity and help prevent obesity. Community leaders and local governments can develop neighborhood crime prevention programs. Government agencies should provide information and support for creating and sustaining these programs. Developing a neighborhood crime prevention program where one does not exist could increase leisure-time walking. It could also build trust and mutual support through the use of community organizing techniques.

Neighborhood Social Cohesion

Higher levels of neighborhood cohesion were related to more walking for leisure and lower rates of obesity. Community leaders and local governments can help build opportunities for the interaction and engagement of neighborhood residents. Research suggests that social cohesion is higher in walkable, mixed-use neighborhoods. One way to promote social cohesion may be to promote policies that increase the walkability of neighborhoods. This includes policies that encourage mixed-use development, availability of spaces for recreation, and pedestrian-oriented communities.

Data Source and Methods

All statements in this report that compare rates for one group with another group reflect statistically significant differences ($p < 0.05$) unless otherwise noted. The findings in this report are based on CHIS data from 2001 through the 2011-12. CHIS interviews more than 50,000 Californians every two years. Since 2011, CHIS has been conducted on a continuous basis; in 2009 and earlier, CHIS was conducted biennially. CHIS 2011-12 completed interviews with over 40,000 adults and 2,700 adolescents, drawn from every county in the state, in English, Spanish, Chinese (both Mandarin and Cantonese), Vietnamese, and Korean. CHIS 2001 data were re-weighted to be consistent with the weighting methodology adopted for CHIS 2003 and CHIS 2005. As a result, CHIS 2001 estimates presented here may differ from some previously published estimates. Body Mass Index (BMI) was calculated from self-reported height and weight as kg/m^2. Adults with a BMI of 30 or higher are considered obese. For adolescents, overweight and obesity are based on age- and sex-specific BMI percentiles, and those with a BMI at or above the 95th percentile are considered obese. Those with a BMI at or above the 85th percentile but below the 95th are considered overweight. CHIS is a collaboration of the UCLA Center for Health Policy Research, the California Department of Public Health, the California Department of Health Care Services, and the Public Health Institute. For funders and other information on CHIS, visit www.chis.ucla.edu.

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