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## Obesity and Diabetes: Two Growing Epidemics in California

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**SUMMARY:** The prevalence of both diabetes and obesity has grown significantly in California. Six million adults are obese and an additional 9.3 million are overweight. Obesity is a significant risk factor for diabetes; more than two million adults have been diagnosed with diabetes in California. Obesity and diabetes

disproportionately affect people of color, the poor and those with the least education in California. Policy and environmental changes that promote and encourage physical activity and healthy eating will likely prove most effective in combating obesity and related conditions.

*“Diabetes prevalence in California increased 26% between 2001 and 2007.”*

The prevalence of obesity in the U.S. has increased dramatically over the past 30 years.<sup>1</sup> During this same time period the prevalence of diabetes has more than doubled.<sup>2</sup> Obesity is a significant risk factor for diabetes and both conditions are significant risk factors for heart disease and other serious medical conditions. In California, both obesity and diabetes continue to increase and the two conditions are highly related. The prevalence of diabetes is more than four times as high among adults who are obese, compared to adults of normal weight (15.8% vs. 3.7%).

This policy brief examines the prevalence of both obesity and diabetes in California, as well as changes in prevalence since 2001. The findings presented rely on data from the California Health Interview Survey (CHIS) collected in 2007 and 2001.

### Prevalence of Obesity and Diabetes in California

The prevalence of obesity among adults has increased from 19.3% in 2001 to 22.7% in 2007 (Exhibit 1). More than six million California adults (23%) are obese and an additional 9.3 million (34%) are overweight. In addition, more than 465,000 California adolescents (13%) are obese and an additional 505,000, or 14%, are overweight.

More than two million California adults have been diagnosed with diabetes, up from 1.5 million in 2001. The prevalence of diabetes has steadily increased from 6.2% in 2001 to 7.8% in 2007 (Exhibit 1). This is an overall increase of 26% over just six years.

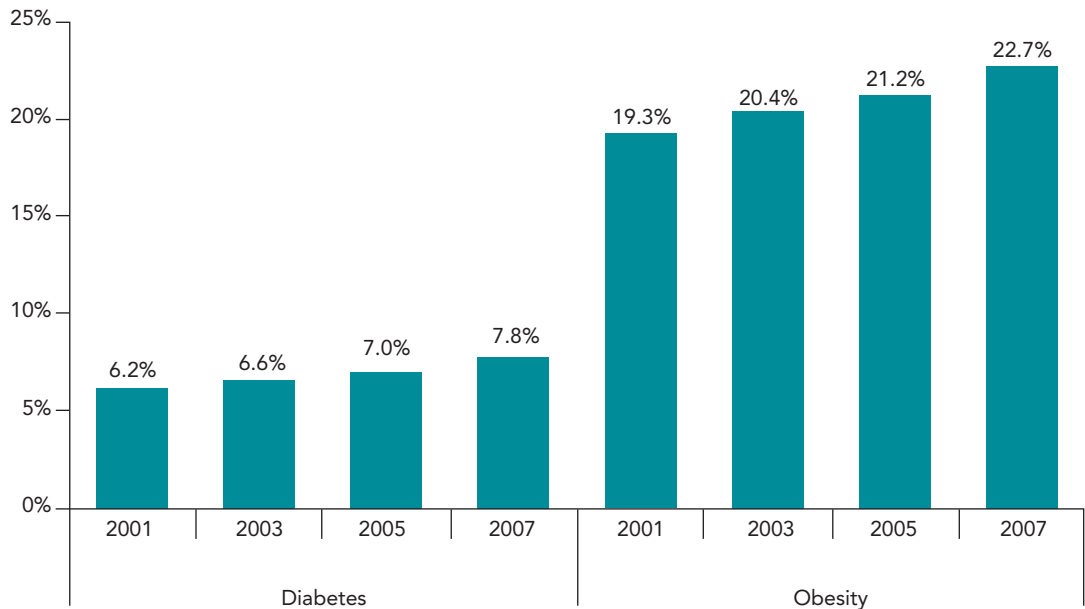
The continued increase in both diabetes and obesity is troubling because of the associated human and financial costs. Not only do both conditions increase the risk of serious medical complications, they are also extremely costly to families, businesses, states and the nation. In California the total cost of diabetes is



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## Exhibit 1

## Obesity and Diabetes Prevalence by Year, Adults Age 18 and Over, California, 2001 to 2007



Source: 2001, 2003, 2005 and 2007 California Health Interview Surveys

*“Latinos, African Americans and American Indians experience much larger increases in diabetes as they age.”*

estimated to be \$24 billion with \$17 billion spent on direct medical care for diabetes, and \$7 billion on the indirect costs associated with diabetes.<sup>3</sup> The cost of obesity to families, employers, the health care industry and the government is equally steep: \$21 billion.<sup>4</sup>

#### **American Indians, African Americans and Latinos Have Highest Prevalence of Obesity and Diabetes**

In California, the prevalence of both obesity and diabetes is higher among American Indians, African Americans and Latinos than among whites or Asians (Exhibit 2).<sup>5</sup>

In addition, the prevalence of both conditions increased among all racial and ethnic groups from 2001 to 2007 with significant increases among whites, Latinos and Asians.<sup>6</sup>

Because the risk of diabetes increases with age, adjusting for age can reveal additional racial and ethnic disparities (Exhibit 3). For example, Latinos, African Americans

and American Indians experience much larger increases in diabetes with age compared to whites. Among adults ages 50 to 64, approximately 20% of Latinos, African Americans and American Indians have diabetes, nearly double the prevalence among whites. Among adults age 65 and above, 40% of American Indians and 28% of Latinos and African Americans have diabetes compared to just 14% of whites. In addition, although the prevalence of diabetes among Asian adults is similar to that of whites among younger adults, diabetes prevalence is significantly higher among older Asians compared to older whites (20% vs. 14%).

More than 13 million Latinos live in California (36% of the state population). Among Latinos of Mexican origin, the prevalence of obesity increased significantly from 26% in 2001 to 31% in 2007.

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**Obesity and Diabetes Prevalence by Race and Ethnicity, Adults Age 18 and Over, California, 2001 and 2007**

**Exhibit 2**

Race/Ethnicity	Obesity Prevalence			Diabetes Prevalence		
	2001 %	2007 %	Percentage Point Change 2001 to 2007	2001 %	2007 %	Percentage Point Change 2001 to 2007
White	17.5	20.4	+2.9**	5.5	6.7	+1.2**
Latino	25.4*	30.1*	+4.7**	7.1*	9.2*	+2.1**
Asian	5.3*	6.7*	+1.4	5.0	6.4	+1.4**
African American	31.0*	35.0*	+4.0	10.5*	11.5*	+1.0
American Indian	31.0*	32.4*	+1.4	9.6*	14.2*	+4.6
<b>All Adults</b>	<b>19.3</b>	<b>22.7</b>	<b>+3.4**</b>	<b>6.2</b>	<b>7.8</b>	<b>+1.6**</b>

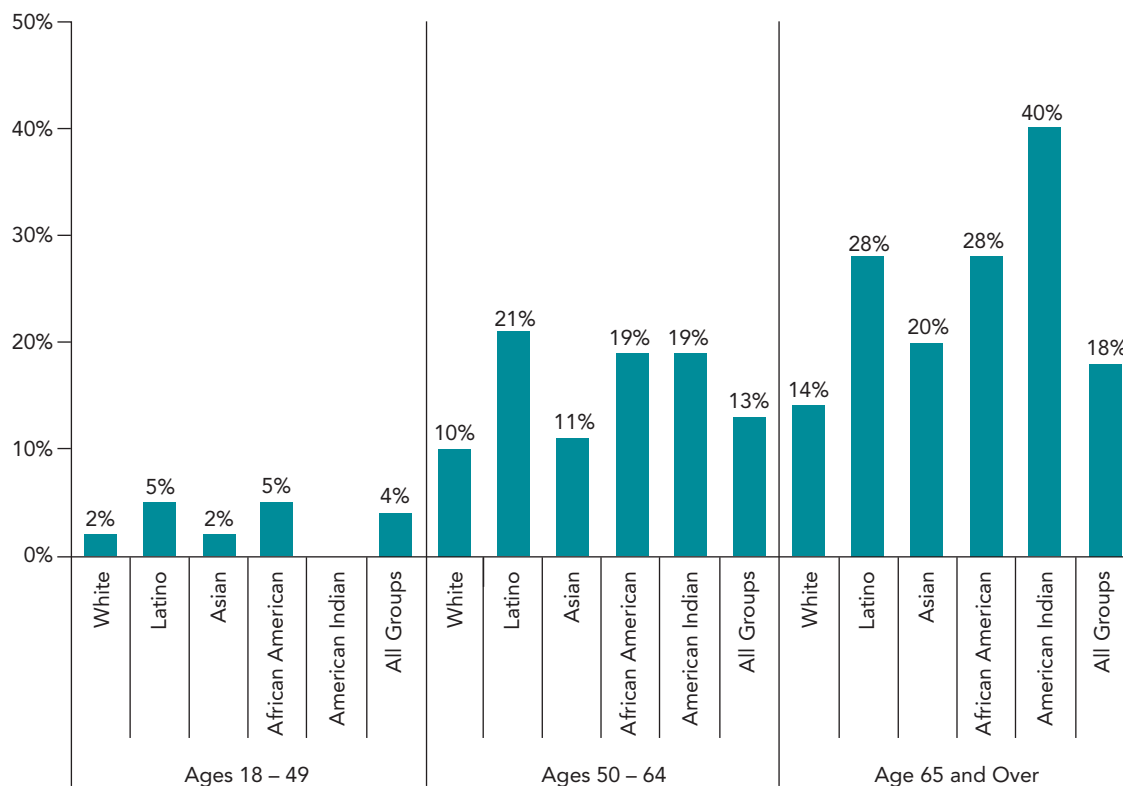
\* Indicates significantly different from White, p<0.05.

\*\* Indicates significantly different from 2001, p<0.05.

Source: 2001 and 2007 California Health Interview Surveys

**Diabetes Prevalence by Race/Ethnicity and Age, Adults, California, 2007**

**Exhibit 3**



Note: The estimate of diabetes prevalence among American Indians ages 18-49 was not reliable.

Source: 2007 California Health Interview Survey

## Exhibit 4

## Obesity and Diabetes Prevalence by Income, Education and Years Lived in the U.S., Adults Age 18 and Over, California, 2001 and 2007

Family Income as Percent of Federal Poverty Level	Obesity Prevalence			Diabetes Prevalence		
	2001 %	2007 %	Percentage Point Change 2001 to 2007	2001 %	2007 %	Percentage Point Change 2001 to 2007
Below 100% FPL	25.4*	27.7*	+2.3	8.5*	10.0*	+1.5**
100-199% FPL	22.0*	25.7*	+3.7**	7.7*	11.3*	+3.6**
200-299% FPL	19.4*	25.9*	+6.5**	7.1*	9.8*	+3.0**
300% FPL and Above	16.5	19.6	+3.1**	4.6	5.7	+1.1**
<b>Education</b>						
Eighth Grade or Less	29.2*	30.3*	+1.1	10.4*	14.8*	+4.4**
Some High School	24.8*	28.3*	+3.5**	8.3*	9.6*	+1.3
High School Diploma	19.8*	25.2*	+5.4**	5.8*	8.2*	+2.4**
Some College	20.8*	25.5*	+4.7**	6.3*	7.8*	+1.5**
College Graduate or Higher	12.6	14.9	+2.3**	4.2	5.1	+0.9**
<b>Years Lived in the U.S. (Foreign-Born Only)</b>						
Less Than 10 Years	11.8*	13.9*	+2.1	3.1*	3.2*	+0.1
More Than 10 to 14 Years	17.7	17.8*	+0.1	4.1*	5.2*	+1.1
15 Years or More	18.5	22.3	+3.8**	8.0	11.2	+3.2**
<b>All Adults</b>	<b>19.3</b>	<b>22.7</b>	<b>+3.4**</b>	<b>6.2</b>	<b>7.8</b>	<b>+1.6**</b>

\* Indicates significantly different from 300% and Above; College Graduate or Higher; 15 Years or More;  $p < 0.05$ .

\*\* Indicates significantly different from 2001,  $p < 0.05$ .

Note: In 2007, the Federal Poverty Level was \$13,540 for a family of two and \$21,203 for a family of four.

Source: 2001 and 2007 California Health Interview Surveys

*“Both diabetes and obesity are extremely costly to families, businesses, states and the nation.”*

Similarly, diabetes prevalence among Mexicans in California has increased steadily from 7% in 2001 to 10% in 2007. The prevalence of diabetes also increased among Latinos of Central American origin from 5% to 7%.

California has the largest Asian population in the nation. Among Asians, obesity prevalence increased significantly among Japanese from 9% in 2001 to 14% in 2007. However, diabetes prevalence increased significantly only among Chinese from 3.1% in 2001 to 5.6% in 2007.

### Obesity and Diabetes Prevalence Highest Among Those with Lower Income and the Least Education

Diabetes and obesity disproportionately affect the poorest Californians (Exhibit 4). Adults living below the poverty line have a significantly higher prevalence of obesity (27.7%) compared to higher income adults (19.6%). Similarly, diabetes is more prevalent among adults below 200% of the Federal Poverty Level (FPL) compared to those at or above 300% FPL (Exhibit 4). Additionally, there have been upward trends in diabetes and obesity prevalence from 2001 to 2007 among all income groups.

Adults with lower levels of education have higher rates of both obesity and diabetes and these groups also experienced larger increases in prevalence of these conditions (Exhibit 4). The prevalence of obesity is nearly twice as high among adults with no more than an eighth-grade education compared to those who graduated from college (30.3% vs. 14.9%, respectively). Diabetes prevalence is three times as high among adults with no high school education compared to those who graduated from college (14.8% vs. 5.1%). Although obesity and diabetes prevalence increased among all education levels, adults without a college degree experienced greater increases.

Among California adults born outside of the United States, the prevalence of both obesity and diabetes increases with their length of residence in this country. Adults who have lived in the U.S. 15 years or more have significantly higher obesity rates than those who have lived here less than 10 years (22.3% vs. 13.9%; Exhibit 4). Similarly, the prevalence of diabetes among adults who have lived in the U.S. for at least 15 years is more than three times as high as the prevalence among adults who have lived in the U.S. for fewer than 10 years (11.2% vs. 3.2%). Not only do longer-term residents have higher prevalence of obesity and diabetes, they also experienced the greatest increase in prevalence between 2001 and 2007.

### **Obesity and Diabetes Affect Poorer Areas of California**

Lower-income California counties tend to have a higher prevalence of obesity and diabetes. Several counties in the San Joaquin Valley (including Tulare, Merced and Fresno) are among those with the lowest median incomes in California. Counties in the Greater Bay Area are among those with the highest incomes, including Marin, which has the highest median income in the state.<sup>7</sup> Regionally, the prevalence of obesity and diabetes is highest in the San Joaquin Valley

(30% and 9.4%, respectively) and lowest in the Greater Bay Area (18.8% and 6.8%, respectively).

County by county, the prevalence of obesity is highest in Imperial (39.6%), Merced (34.3%) and Tulare (31.1%) counties and lowest in San Francisco (11.8%) and Marin (13.6%) counties (Exhibit 5). After adjusting for age, diabetes prevalence is highest in Tulare (12.1%) and Fresno (10.9%) and lowest in San Luis Obispo (3.1%), Nevada (3.8%) and Marin (3.8%; Exhibit 6). However Los Angeles, due to the size of its population, has by far the most obese residents (1.7 million) and the most residents diagnosed with diabetes (642,000 residents). There is also wide variation in obesity and diabetes rates within Los Angeles County. Obesity rates range from 12% in West Los Angeles to 34% in South Los Angeles, and diabetes rates range from 6.2% in West Los Angeles to 10% in East Los Angeles.<sup>8</sup>

### **Conclusions and Policy Recommendations**

More than 15.3 million California adults are overweight or obese (57%). In addition, more than 970,000 of the state's adolescents are overweight or obese (28%). The prevalence of obesity among California adults (23%) is considerably higher than the Healthy People 2010 target of 15%. In addition, obesity prevalence among California adolescents (13%) is more than twice as high as the HP 2010 target of 5%.<sup>9</sup> The prevalence of diabetes among California adults (7.8%) is more than three times the HP 2010 target of 2.5% of the population. Even more troubling is the fact that the prevalence of both obesity and diabetes has been increasing in California, taking the state even further away from the HP 2010 targets.

Although there are a number of factors associated with diabetes and obesity ranging from genetics to individual behaviors, the composition and structure of neighborhoods

*(Continued on Page 10)*

*“Obesity rates rise along with time spent in the United States.”*

*“Diabetes and obesity disproportionately affect the poorest Californians.”*

**Exhibit 5** Prevalence of Overweight and Obesity by County or County Group, Adults Age 18 and Over, California, 2007

	Overweight Prevalence % (95% CI)	Estimated Number of Overweight Residents (95% CI)		Obesity Prevalence % (95% CI)	Estimated Number of Obese Residents (95% CI)	
<b>Northern and Sierra Counties</b>	<b>35.1 (32.9-37.3)</b>	<b>370,000</b>	<b>(343,000-396,000)</b>	<b>24.7 (22.8-26.7)</b>	<b>260,000</b>	<b>(238,000-282,000)</b>
Butte	37.2 (30.5-44.0)	61,000	(47,000-75,000)	21.4 (16.7-26.1)	35,000	(28,000-43,000)
Shasta	35.0 (28.8-41.3)	48,000	(38,000-57,000)	24.5 (19.0-30.0)	33,000	(25,000-41,000)
Humboldt	32.7 (23.3-42.2)	33,000	(22,000-43,000)	25.8 (17.1-34.5)	26,000	(16,000-35,000)
Del Norte, Siskiyou, Lassen, Trinity, Modoc, Plumas, Sierra	32.0 (25.5-38.6)	36,000	(28,000-45,000)	25.3 (19.8-30.8)	29,000	(22,000-35,000)
Mendocino	37.8 (28.9-46.6)	26,000	(18,000-33,000)	25.1 (15.6-34.5)	17,000	(9,000-25,000)
Lake	35.8 (29.9-41.7)	18,000	(15,000-21,000)	28.8 (22.3-35.2)	14,000	(11,000-18,000)
Tehama, Glenn, Colusa	33.8 (27.3-40.3)	28,000	(22,000-34,000)	30.0 (23.9-36.0)	24,000	(19,000-30,000)
Sutter	39.0 (31.6-46.4)	25,000	18,000-32,000)	27.9 (22.3-33.6)	18,000	(14,000-22,000)
Yuba	35.3 (30.0-40.6)	17,000	(14,000-20,000)	30.4 (25.1-35.8)	15,000	(12,000-17,000)
Nevada	37.3 (31.9-42.8)	30,000	(25,000-35,000)	14.1 (9.8-18.3)	11,000	(8,000-15,000)
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono, Alpine	33.2 (27.7-38.8)	49,000	(41,000-58,000)	25.5 (19.7-31.4)	38,000	(28,000-48,000)
<b>Greater Bay Area</b>	<b>33.6 (31.8-35.4)</b>	<b>1,815,000</b>	<b>(1,707,000-1,923,000)</b>	<b>18.8 (17.3-20.3)</b>	<b>1,016,000</b>	<b>(931,000-1,102,000)</b>
Santa Clara	36.6 (32.7-40.6)	484,000	(420,000-548,000)	15.3 (12.6-18.0)	202,000	(166,000-239,000)
Alameda	30.5 (26.8-34.2)	346,000	(300,000-392,000)	22.7 (18.9-26.4)	257,000	(209,000-305,000)
Contra Costa	33.8 (29.3-38.4)	262,000	(223,000-301,000)	20.2 (15.6-24.8)	157,000	(116,000-197,000)
San Francisco	31.1 (26.0-36.2)	210,000	(169,000-250,000)	11.8 (8.4-15.2)	80,000	(56,000-104,000)
San Mateo	34.8 (28.6-41.0)	194,000	(153,000-236,000)	17.9 (13.3-22.5)	100,000	(72,000-127,000)
Sonoma	32.9 (27.1-38.8)	117,000	(94,000-140,000)	28.0 (21.9-34.2)	99,000	(74,000-125,000)
Solano	39.0 (32.5-45.6)	116,000	(94,000-138,000)	22.9 (17.3-28.5)	68,000	(50,000-86,000)
Marin	28.3 (22.1 - 34.5)	54,000	(41,000-66,000)	13.6 (8.8-18.4)	26,000	(16,000-35,000)
Napa	33.4 (27.4-39.4)	32,000	(26,000-39,000)	28.6 (21.9-35.3)	28,000	(20,000-35,000)
<b>Sacramento Area</b>	<b>34.5 (31.8-37.1)</b>	<b>523,000</b>	<b>(479,000-567,000)</b>	<b>24.4 (21.8-26.9)</b>	<b>370,000</b>	<b>(327,000-413,000)</b>
Sacramento	34.5 (30.9-38.1)	346,000	(307,000-386,000)	27.1 (23.5-30.6)	271,000	(232,000-311,000)
Placer	35.8 (29.8-41.7)	85,000	(69,000-102,000)	17.9 (13.6-22.3)	43,000	(32,000-54,000)
Yolo	32.0 (25.7-38.3)	44,000	(35,000-54,000)	24.3 (17.2-31.4)	34,000	(22,000-45,000)
El Dorado	34.2 (29.0-39.5)	47,000	(39,000-55,000)	16.1 (11.9-20.4)	22,000	(16,000-28,000)

Note: A map displaying obesity rates by county is available at: <http://www.healthpolicy.ucla.edu/pubs/Publication.aspx?pubID=421>

Source: 2007 California Health Interview Survey

Prevalence of Overweight and Obesity by County or County Group, Adults Age 18 and Over, California, 2007 (Continued)

Exhibit 5

	Overweight Prevalence % (95% CI)	Estimated Number of Overweight Residents (95% CI)	Obesity Prevalence % (95% CI)	Estimated Number of Obese Residents (95% CI)
<b>San Joaquin Valley</b>	<b>34.1 (31.8-36.4)</b>	<b>886,000 (821,000-951,000)</b>	<b>30.0 (27.7-32.3)</b>	<b>780,000 (715,000-846,000)</b>
Fresno	34.9 (29.4-40.4)	219,000 (179,000-259,000)	28.7 (23.7-33.7)	181,000 (146,000-215,000)
Kern	31.0 (25.9-36.1)	165,000 (138,000-193,000)	29.3 (23.7-34.9)	156,000 (122,000-190,000)
San Joaquin	36.1 (29.8-42.4)	160,000 (126,000-193,000)	28.9 (23.1-34.7)	128,000 (100,000-156,000)
Stanislaus	31.0 (25.2-36.7)	108,000 (87,000-129,000)	31.9 (25.5-38.3)	111,000 (85,000-137,000)
Tulare	37.4 (31.6-43.2)	108,000 (91,000-124,000)	31.1 (24.6-37.5)	89,000 (67,000-112,000)
Merced	33.0 (26.5-39.5)	57,000 (46,000-67,000)	34.3 (25.9-42.8)	59,000 (39,000-78,000)
Kings	35.9 (30.2-41.5)	33,000 (27,000-39,000)	29.4 (24.2-34.5)	27,000 (22,000-32,000)
Madera	37.4 (30.5-44.4)	37,000 (28,000-45,000)	30.3 (23.1-37.5)	30,000 (21,000-38,000)
<b>Central Coast</b>	<b>34.1 (31.3-37.0)</b>	<b>552,000 (503,000-602,000)</b>	<b>21.4 (19.0-23.8)</b>	<b>347,000 (306,000-387,000)</b>
Ventura	34.0 (28.7-39.4)	203,000 (168,000-238,000)	20.1 (15.7-24.5)	120,000 (92,000-147,000)
Santa Barbara	29.8 (23.6-36.0)	90,000 (68,000-111,000)	23.5 (17.9-29.1)	71,000 (52,000-89,000)
Santa Cruz	36.3 (28.7-43.9)	72,000 (52,000-91,000)	17.6 (12.5-22.7)	35,000 (24,000-45,000)
San Luis Obispo	31.6 (24.8-38.4)	61,000 (46,000-75,000)	17.5 (13.1-21.9)	34,000 (26,000-42,000)
Monterey	36.9 (30.5-43.3)	107,000 (85,000-129,000)	26.7 (20.6-32.8)	78,000 (57,000-98,000)
San Benito	49.2 (38.5-59.9)	20,000 (13,000-27,000)	24.6 (14.9-34.3)	10,000 (5,000-15,000)
<b>Los Angeles</b>	<b>34.8 (33.2-36.4)</b>	<b>2,552,000 (2,418,000-2,685,000)</b>	<b>22.6 (21.3-24.0)</b>	<b>1,660,000 (1,555,000-1,765,000)</b>
Los Angeles	34.8 (33.2-36.4)	2,552,000 (2,418,000-2,685,000)	22.6 (21.3-24.0)	1,660,000 (1,555,000-1,765,000)
<b>Other Southern California Counties</b>	<b>34.7 (33.2-36.2)</b>	<b>2,554,000 (2,431,000-2,676,000)</b>	<b>22.5 (21.2-23.9)</b>	<b>1,657,000 (1,550,000-1,764,000)</b>
Orange	34.5 (31.5-37.6)	779,000 (699,000-859,000)	18.5 (15.9-21.1)	418,000 (353,000-482,000)
San Diego	33.0 (30.7-35.2)	725,000 (671,000-780,000)	21.7 (19.5-23.9)	477,000 (423,000-531,000)
San Bernardino	36.4 (32.9-39.9)	504,000 (447,000-560,000)	26.5 (23.4-29.6)	366,000 (320,000-412,000)
Riverside	36.0 (32.2-39.7)	505,000 (444,000-566,000)	24.9 (21.6-28.2)	350,000 (300,000-399,000)
Imperial	34.6 (27.5-41.7)	41,000 (32,000-50,000)	39.6 (30.9-48.4)	47,000 (32,000-62,000)
<b>California</b>	<b>34.4 (33.7-35.2)</b>	<b>9,251,000 (9,021,000-9,481,000)</b>	<b>22.7 (22.0-23.3)</b>	<b>6,090,000 (5,896,000-6,264,000)</b>

Note: A map displaying obesity rates by county is available at: <http://www.healthpolicy.ucla.edu/pubs/Publication.aspx?pubID=421>

Source: 2007 California Health Interview Survey

## Exhibit 6

## Diabetes Prevalence by County or County Group, Adults Age 18 and Over, California, 2007

	Diabetes Prevalence % (95% CI)	Age-Adjusted Diabetes Prevalence % (95% CI)	Estimated Number of Residents with Diabetes (95% CI)
<b>Northern and Sierra Counties</b>	<b>7.9 (6.9-8.8)</b>	<b>6.8 (6.0-7.6)</b>	<b>83,000 (73,000-92,000)</b>
Butte	6.7 (4.7-8.8)	6.1 (4.2-7.9)	11,000 (8,000-14,000)
Shasta	6.6 (4.4-8.8)	6.3 (3.9-8.6)	9,000 (6,000-12,000)
Humboldt	6.7 (4.2-9.2)	6.2 (4.2-8.2)	7,000 (5,000-9,000)
Del Norte, Siskiyou, Lassen, Trinity, Modoc, Plumas, Sierra	7.9 (5-10.8)	6.6 (3.6-9.5)	9,000 (6,000-12,000)
Mendocino	7.5 (4.8-10.2)	6.5 (3.9-9.1)	5,000 (3,000-7,000)
Lake	9.7 (6.4-13.0)	7.4 (4.7-10.1)	5,000 (3,000-7,000)
Tehama, Glenn, Colusa	10.0 (6.2-13.9)	10.7 (6.2-15.1)	8,000 (5,000-12,000)
Sutter	10.1 (6.8-13.4)	9.4 (6.4-12.4)	6,000 (4,000-9,000)
Yuba	7.7 (5.1-10.2)	7.7 (5.3-10.0)	4,000 (2,000-5,000)
Nevada	4.9 (2.8-6.9)	3.8 (2.1-5.4)	4,000 (2,000-6,000)
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono, Alpine	10.1 (6.5-13.7)	7.2 (4.6-9.7)	15,000 (9,000-21,000)
<b>Greater Bay Area</b>	<b>6.8 (6.0-7.6)</b>	<b>6.2 (5.0-5.7)</b>	<b>367,000 (322,000-413,000)</b>
Santa Clara	5.3 (4.0-6.7)	4.9 (3.7-6.2)	71,000 (53,000-88,000)
Alameda	7.8 (5.8-9.8)	7.3 (5.4-9.1)	88,000 (65,000-112,000)
Contra Costa	6.5 (4.0-9.0)	6.1 (3.7-8.5)	51,000 (31,000-70,000)
San Francisco	6.8 (4.4-9.2)	6.5 (4.2-8.8)	46,000 (29,000-62,000)
San Mateo	7.6 (4.8-10.4)	6.8 (4.2-9.3)	42,000 (26,000-58,000)
Sonoma	7.1 (4.4-9.8)	6.6 (4.1-9.1)	25,000 (15,000-35,000)
Solano	9.4 (5.8-13.0)	8.8 (5.8-11.9)	28,000 (17,000-39,000)
Marin	4.0 (0.7-7.3)	3.8 (0.2-7.4)	8,000 (1,000-14,000)
Napa	9.2 (5.6-12.9)	8.4 (4.8-12.0)	9,000 (5,000-13,000)
<b>Sacramento Area</b>	<b>6.5 (5.4-7.6)</b>	<b>6.0 (5.0-7.0)</b>	<b>99,000 (82,000-116,000)</b>
Sacramento	6.6 (5.2-8.1)	6.2 (4.9-7.5)	66,000 (52,000-81,000)
Placer	5.5 (3.2-7.9)	4.7 (2.8-6.5)	13,000 (7,000-19,000)
Yolo	7.1 (4.3-10.0)	7.6 (4.9-10.3)	10,000 (6,000-14,000)
El Dorado	6.9 (3.8-10.1)	5.4 (3.1-7.7)	10,000 (5,000-14,000)

Note: A map displaying diabetes rates by county is available at: <http://www.healthpolicy.ucla.edu/pubs/Publication.aspx?pubID=421>

Source: 2007 California Health Interview Survey

**Diabetes Prevalence by County or County Group, Adults Age 18 and Over, California, 2007**  
 (Continued)

Exhibit 6

	Diabetes Prevalence % (95% CI)	Age-Adjusted Diabetes Prevalence % (95% CI)	Estimated Number of Residents with Diabetes (95% CI)
<b>San Joaquin Valley</b>	<b>9.4 (8.1-10.7)</b>	<b>9.8 (8.5-11.0)</b>	<b>244,000 (209,000-279,000)</b>
Fresno	10.5 (7.4-13.7)	10.9 (8.0-13.8)	66,000 (46,000-87,000)
Kern	9.3 (6.1-12.6)	10.1 (6.7-13.5)	50,000 (32,000-68,000)
San Joaquin	8.7 (5.5-11.9)	8.8 (5.8-11.8)	39,000 (24,000-53,000)
Stanislaus	7.7 (4.7-10.7)	7.8 (4.6-11.1)	27,000 (16,000-38,000)
Tulare	11.3 (7.7-14.9)	12.1 (8.4-15.7)	32,000 (22,000-43,000)
Merced	7.5 (4.9-10.1)	8.1 (5.8-10.5)	13,000 (9,000-17,000)
Kings	10.4 (7.2-13.7)	12.0 (8.6-15.3)	10,000 (6,000-13,000)
Madera	8.1 (5.4-10.8)	7.3 (5.0-9.5)	8,000 (5,000-11,000)
<b>Central Coast</b>	<b>7.7 (5.9-9.4)</b>	<b>7.1 (5.5-8.7)</b>	<b>124,000 (95,000-153,000)</b>
Ventura	9.5 (5.9-13.2)	8.8 (5.6-12.0)	57,000 (34,000-80,000)
Santa Barbara	5.8 (3.5-8.1)	5.2 (3.2-7.3)	17,000 (11,000-24,000)
Santa Cruz	7.3 (2.1-12.5)	6.6 (2.8-10.5)	14,000 (4,000-25,000)
San Luis Obispo	3.9 (2.4-5.5)	3.1 (1.9-4.3)	8,000 (5,000-11,000)
Monterey	8.4 (4.6-12.2)	8.2 (4.4-12.1)	24,000 (13,000-36,000)
San Benito	7.6 (3.6-11.7)	8.3 (4.7-11.8)	3,000 (1,000-5,000)
<b>Los Angeles</b>	<b>8.8 (7.8-9.7)</b>	<b>8.4 (7.5-9.3)</b>	<b>642,000 (568,000-716,000)</b>
Los Angeles	8.8 (7.8-9.7)	8.4 (7.5-9.3)	642,000 (568,000-716,000)
<b>Other Southern California Counties</b>	<b>7.3 (6.7-8.0)</b>	<b>7.2 (6.6-7.9)</b>	<b>540,000 (490,000-591,000)</b>
Orange	6.7 (5.4-8.0)	6.5 (5.3-7.7)	151,000 (122,000-181,000)
San Diego	6.3 (5.2-7.3)	6.0 (5.0-7.0)	138,000 (115,000-162,000)
San Bernardino	9.2 (7.5-11.0)	9.7 (7.9-11.4)	127,000 (103,000-152,000)
Riverside	7.8 (6.2-9.5)	7.8 (6.3-9.4)	110,000 (87,000-133,000)
Imperial	11.0 (7.9-14.0)	10.9 (8.5-13.4)	13,000 (10,000-16,000)
<b>California</b>	<b>7.8 (7.4-8.2)</b>	<b>7.5 (7.1-7.8)</b>	<b>2,100,000 (2,000,000-2,200,000)</b>

Note: A map displaying diabetes rates by county is available at: <http://www.healthpolicy.ucla.edu/pubs/Publication.aspx?pubID=421>

Source: 2007 California Health Interview Survey

“Policy and environmental approaches should encourage healthy eating and opportunities for physical activity.”

and social environments have also been increasingly implicated as impediments to maintaining a healthy lifestyle. Both physical activity and healthy eating are important for preventing and reducing obesity and diabetes. 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. However, additional efforts by state and local policymakers as well as communities to promote physical activity and healthy eating are warranted given the statewide increase in the prevalence of obesity and diabetes. Recommendations include the following:

- ***Promote environments that encourage regular physical activity***

Lack of physical activity increases the risk of both obesity and diabetes. The Physical Activity Guidelines for Americans recommend that adults engage in at least 150 minutes a week of moderate-intensity, or 75 minutes a week of vigorous-intensity, aerobic physical activity.<sup>10</sup> The guidelines also recommend that adolescents engage in at least one hour of physical activity daily. Unfortunately, recent national data suggest that only 64% of U.S. adults and just 17% of adolescents meet the current guidelines.<sup>11</sup> Policy and environmental approaches that encourage active living and provide opportunities for physical activity include: 1) making school facilities available to the community after school and on weekends; 2) improving the quality of existing recreational facilities; 3) increasing the availability of parks and other green spaces; and 4) enhancing physical education and increasing physical activity opportunities in school settings.

- ***Promote environments that encourage healthy eating***

Poor food environments, as defined by limited access to healthy food options, have

been associated with higher rates of obesity and diabetes.<sup>12</sup> In addition, low-income neighborhoods and communities of color have fewer grocery stores and a higher density of fast-food restaurants and convenience stores.<sup>13</sup> These disparities in food access may contribute to disparities in health conditions, such as obesity and diabetes.

Food environments can be improved by increasing the availability and affordability of healthy foods. Neighborhoods and local government agencies have been working with grocery chains and wholesalers to attract businesses to areas with a relative paucity of nutritious food options. This process should continue and expand. Additionally, some cities and neighborhoods have begun to limit the number and density of fast food venues, both to encourage opportunities for other food vendors, as well as to reduce the density of unhealthy food options. Policymakers can consider the following strategies for improving food environments: 1) expansion of access to fruits and vegetables in communities and at school; 2) local efforts through zoning, or incentives to increase the presence of supermarkets, farmer’s markets, produce vendors and community gardens in areas with limited consumer options; and 3) addressing the relative affordability of healthier food options compared to less healthy options.

### Data Source

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 brief are based on data from the 2001 and 2007 California Health Interview Surveys (CHIS 2001 and CHIS 2007). CHIS 2007 completed interviews with over 50,000 adults and 3,600 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. The California Health Interview Survey is a collaboration of the



CHIS is the nation’s largest state health survey. Conducted every two years on a wide range of health topics, CHIS data gives a detailed picture of the health and health care needs of California’s large and diverse population. CHIS is conducted by the UCLA Center for Health Policy Research in collaboration with the California Department of Public Health, the Department of Health Care Services and the Public Health Institute. Learn more at:

[www.chis.ucla.edu](http://www.chis.ucla.edu)

UCLA Center for Health Policy Research, the California Department of Public Health, the California Department of Health Care Services and the Public Health Institute. Funding for the CHIS 2007 statewide survey was provided by the California Department of Public Health, the California Department of Health Care Services, The California Endowment, the National Cancer Institute, First 5 California, the California Office of the Patient Advocate, the California Department of Mental Health and Kaiser Permanente. For local funders and other information on CHIS, visit [www.chis.ucla.edu](http://www.chis.ucla.edu)

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### Endnotes

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- 5 The race and ethnicity variable includes the following categories: Latino, non-Latino white, Asian, African American, American Indian/Alaska Native, Native Hawaiian/other Pacific Islander, and two or more races. This variable is based on responses to two questions: 1) Are you Latino or Hispanic; and 2) Would you describe yourself as Native Hawaiian, Other Pacific Islander, American Indian/Alaska Native, Asian, Black/African American, or White? All respondents who report being Latino or Hispanic are included in the Latino category. The other categories represent non-Latino, mutually exclusive single race groups based on responses to the second question. Results for Native Hawaiians and other Pacific Islanders are not presented due to small sample sizes. Results for the “two or more races” category are not presented due to the heterogeneity of this group.
- 6 Although American Indian and Alaska Natives (subsequently referred to as American Indians) experienced the largest change in diabetes prevalence, the increase was not statistically significant due to the relatively small sample size. However, because American Indians are at particularly high risk for diabetes, separate analyses of all adults who reported any American Indian heritage, alone or in combination with any other race or ethnicity, were conducted to examine trends in prevalence among this high-risk group. Diabetes prevalence in this group increased significantly from 7.8% in 2001 to 12.7% in 2007.
- 7 US Census Bureau, Small Area Income and Poverty Estimates. <http://www.census.gov/did/www/saipe/county.html> Accessed [July 23, 2010].
- 8 These rates are for Los Angeles County Service Planning Areas (SPA). For more information about LA SPAs, please see: <http://www.lapublichealth.org/spa/index.htm>
- 9 Overweight and obesity are based on Body Mass Index (BMI), calculated as kg/m<sup>2</sup> based on self-reported height and weight. For adults, obesity is defined as a BMI of 30 or greater and overweight as a BMI between 25 and 30. For adolescents, obesity is defined as at or above the gender- and age-specific 95th percentile of BMI based on CDC growth charts for the US. Overweight is defined as between the 85th and 95th percentiles.
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