



# Bubbling Over:

SODA CONSUMPTION AND ITS LINK TO OBESITY IN CALIFORNIA

## The Facts

### WHAT

*Bubbling Over: Soda Consumption and Its Link to Obesity in California*, a new study released today, shows that county by county consumption of soda and other sugar-sweetened beverages is linked directly to higher levels of overweight and obesity.

### WHY

Unlike any other products Californians consume in large quantities, sodas offer no nutritional value. What's more, they contribute empty calories to the state's costly and out-of-control obesity crisis.

### WHEN

This report utilizes data from the 2005 California Health Interview Survey (CHIS).

### HOW

This report examines geographical variations in consumption of soda and other sugar-sweetened beverages among children, adolescents and adults in California, as well as its association with overweight and obesity among adults and adolescents, using data from the 2005 California Health Interview Survey. Researchers completed interviews with over 4,000 adolescents and over 43,000 adults drawn from every county in the state. Respondents self-reported their soda and other sugar-sweetened beverage consumption levels, and for children, the most knowledgeable guardian responded to questions regarding consumption of soda and other sugar-sweetened beverages.

### WHO

The study was conducted by the UCLA Center for Health Policy Research and the California Center for Public Health Advocacy.

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## KEY FINDINGS

- » Over 10.7 million Californians over the age of one drink at least one soda or other sugar-sweetened beverage a day.
  - » 41 percent of children ages 2-11, 62 percent of adolescents ages 12-17, and 24 percent of adults drink at least one soda or other sugar-sweetened beverage every day.
  - » Adults who drink one or more sodas or other sugar-sweetened beverages each day are 27 percent more likely to be overweight or obese.
  - » Consumption of soda and other sugar-sweetened beverages varies from county to county and city to city in California with dramatic variations between some counties and some cities.
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## *Soda by the Numbers*

- 22** The number of teaspoons of added sugar Americans consume daily, compared to the recommended 5-9 teaspoons.<sup>1</sup>
- 17** The number of teaspoons of sugar in a 20-ounce bottle of soda.<sup>2</sup>
- 43** Percentage of additional calories Americans have been consuming since the 1970s that come from soda.<sup>3</sup>
- 50** The number of gallons of soda and other sugar-sweetened beverages the average American consumes annually.<sup>4</sup>
- 1** Ranking of soda among all foods as the source of added sugar in the American diet.<sup>1</sup>
- 66** Percentage of all high fructose corn syrup consumed in the United States through beverages.<sup>5</sup>
- 149** Percent of increase in volume of average size soda sold in the 1950s compared to the average size soda sold today (from 6.5 oz<sup>3</sup> to 16.2 oz<sup>6</sup>).
- 38** Percent of decrease in energy intake from milk since 1977, the same period in which soda consumption has skyrocketed.<sup>7</sup>
- 450** Different types of soft drinks produced by the big three soda companies.<sup>8</sup>
- 60** Percentage of increase in a child's risk for obesity with every additional daily serving of soda.<sup>9</sup>

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2 Jacobson MF. *Liquid candy: How soft drinks are harming Americans' health*. Center for Science in the Public Interest. 2005. Available at: [http://www.cspinet.org/new/pdf/liquid\\_candy\\_final\\_w\\_new\\_supplement.pdf](http://www.cspinet.org/new/pdf/liquid_candy_final_w_new_supplement.pdf). Accessed December 5, 2008.

3 Woodward-Lopez G, Kuo J, and Ritchie L. *To What Extent Have Sweetened Beverages Contributed to the Obesity Epidemic?* The Dr. Robert C. and Veronica Atkins Center for Weight and Health University of California, Berkeley, January 2009 – unpublished.

4 UC Berkeley Center for Weight and Health, based on Duffey, Kiyah J., and Barry M. Popkin. "Shifts in patterns and consumption of beverages between 1965 and 2002." *Obesity*, 2007;15:2739–2747., personal communication, September 2, 2009.

5 Bray GA, Nielsen SJ, and Popkin BM. "Consumption of high-fructose corn syrup in beverages may play a role in the epidemic of obesity." *American Journal of Clinical Nutrition*. 2004;79:537–43.

6 Popkin, Barry. UNC School of Public Health. Unpublished research.

7 Nielsen, Samara Joy and Popkin, Barry M. "Changes in Beverage Intake Between 1977 and 2001." *American Journal of Preventive Medicine*. October 2004.

8 West, Larry. "What is the Problem with Soft Drinks?" *The Environmental Magazine*, 2007. Available at: [http://environment.about.com/od/health/as/soft\\_drinks.htm](http://environment.about.com/od/health/as/soft_drinks.htm), accessed on January 21, 2009.

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## *Overweight and Obesity by the Numbers*

- 56** Percent of California adults who are overweight or obese (35 percent overweight and 21 percent obese).<sup>1</sup>
- 44** Percent of California adolescents who are overweight or obese (30 percent overweight and 14 percent obese).<sup>1</sup>
- 173** Percentage of increase in adult obesity rates in California from 1984 to 2008 (8.9 percent to 24.3 percent).<sup>2</sup>
- 41** Amount in billions of dollars that overweight, obesity and physical inactivity cost California each year<sup>3</sup> (twice the amount reported in 2000).<sup>4</sup>
- 1** Ranking of California among all states in the amount it spends in public and private money to address the health consequences of obesity.<sup>5</sup>

<sup>1</sup> 2005 California Health Interview Survey.

<sup>2</sup> Centers for Disease Control and Prevention. [Prevalence and Trends Data, California—2008, Overweight and Obesity](#).

<sup>3</sup> *The Economic Costs of Overweight, Obesity, and Physical Inactivity Among California Adults-2006* (July 2009). The California Center for Public Health Advocacy.

<sup>4</sup> *The Economic Costs of Physical Inactivity, Obesity and Overweight in California Adults During the Year 2000: A Technical Analysis* (April 2005). Sacramento, CA: California Department of Health Services.

<sup>5</sup> Finkelstein EA, Fiebelkorn IC, Wang G. "State-level estimates of annual medical expenditures attributable to obesity." *Obesity Research*. Jan 2004;12(1):18-24.



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## SODA CONSUMPTION AND ITS LINK TO OBESITY IN CALIFORNIA

Percentage of Adults Drinking One or More Sodas per Day and Percentage of Adults Who Are Overweight or Obese, by County

| County  | % Adults Drinking One or More Sodas per Day | % of Adults Who Are Overweight or Obese |
|---|---|---|
| Alameda   | 17.4  | 48.3                                    |
| Butte   | 20.3  | 56.7                                    |
| Contra Costa  | 21.2  | 59.5                                    |
| Del Norte, Siskiyou, Lassen, Trinity, Modoc, Plumas, Sierra | 20.8  | 59.1                                    |
| El Dorado   | 21.6  | 57.1                                    |
| Fresno  | 35.0  | 57.8                                    |
| Humboldt  | 16.4  | 58.4                                    |
| Imperial  | 36.4  | 67.1                                    |
| Kern  | 36.6  | 66.2                                    |
| Kings   | 39.1  | 63.8                                    |
| Lake  | 30.1  | 62.6                                    |
| Los Angeles   | 25.5  | 55.9                                    |
| Madera  | 37.4  | 63.8                                    |
| Marin   | 10.6  | 43.6                                    |
| Mendocino   | 18.8  | 55.9                                    |
| Merced  | 32.7  | 66.6                                    |
| Monterey  | 27.1  | 61.1                                    |
| Napa  | 27.3  | 56.2                                    |
| Nevada  | 17.5  | 51.1                                    |
| Orange  | 23.4  | 49.1                                    |
| Placer  | 18.4  | 55.1                                    |
| Riverside   | 29.5  | 63.2                                    |
| Sacramento  | 23.6  | 58.5                                    |
| San Benito  | 25.6  | 63.9                                    |
| San Bernardino  | 29.6  | 64.7                                    |

| County  | % Adults Drinking One or More Sodas per Day | % of Adults Who Are Overweight or Obese |
|---|---|---|
| San Diego   | 21.1  | 54.7                                    |
| San Francisco   | 10.9  | 42.6                                    |
| San Joaquin   | 26.6  | 70                                      |
| San Luis Obispo   | 18.3  | 56.6                                    |
| San Mateo   | 14.4  | 46.1                                    |
| Santa Barbara   | 19.0  | 53.9                                    |
| Santa Clara   | 21.1  | 50                                      |
| Santa Cruz  | 15.5  | 48.8                                    |
| Shasta  | 27.5  | 56                                      |
| Solano  | 26.1  | 59.7                                    |
| Sonoma  | 20.7  | 56.5                                    |
| Stanislaus  | 34.3  | 66.6                                    |
| Sutter  | 29.2  | 55.3                                    |
| Tehama, Glenn, Colusa                                     | 30.1  | 65.7                                    |
| Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono, Alpine | 17.3  | 56.3                                    |
| Tulare  | 36.1  | 66.1                                    |
| Ventura   | 24.8  | 58.4                                    |
| Yolo  | 13.9  | 55.9                                    |
| Yuba  | 30.9  | 64                                      |
| <b>Statewide</b>  | <b>24.3</b>                                 | <b>56.1</b>                             |

2005 California Health Interview Survey

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### Percentage of Adults, Adolescents and Children Drinking One or More Sodas per Day by County

| County  | % Adults | % Adolescents (ages 12-17) | % Children (ages 2-11) |
|---|----------|----------------------------|------------------------|
| Alameda   | 17.4     | 58.9                       | 31.0                   |
| Butte   | 20.3     | 61.8                       | 30.4                   |
| Contra Costa  | 21.2     | 47.2                       | 40.7                   |
| Del Norte, Siskiyou, Lassen, Trinity, Modoc, Plumas, Sierra | 20.8     | 63.0                       | 24.5                   |
| El Dorado   | 21.6     | 55.3                       | 31.8                   |
| Fresno  | 35.0     | 68.7                       | 53.1                   |
| Humboldt  | 16.4     | 50.3                       | 33.2                   |
| Imperial  | 36.4     | 61.2                       | 60.7                   |
| Kern  | 36.6     | 67.2                       | 55.0                   |
| Kings   | 39.1     | 57.7                       | 57.2                   |
| Lake  | 30.1     | 62.8                       | 31.6                   |
| Los Angeles   | 25.5     | 64.9                       | 44.3                   |
| Madera  | 37.4     | 75.3                       | 39.9                   |
| Marin   | 10.6     | 41.3                       | 18.4                   |
| Mendocino   | 18.8     | 39.0                       | 38.1                   |
| Merced  | 32.7     | *                          | 55.4                   |
| Monterey  | 27.1     | 58.1                       | 32.8                   |
| Napa  | 27.3     | 56.8                       | 41.5                   |
| Nevada  | 17.5     | 40.9                       | 25.6                   |
| Orange  | 23.4     | 56.4                       | 36.9                   |
| Placer  | 18.4     | 66.2                       | 31.5                   |
| Riverside   | 29.5     | 69.5                       | 40.6                   |
| Sacramento  | 23.6     | 55.5                       | 35.4                   |
| San Benito  | 25.6     | 58.9                       | 26.4                   |
| San Bernardino  | 29.6     | 68.5                       | 49.6                   |

| County  | % Adults | % Adolescents (ages 12-17) | % Children (ages 2-11) |
|---|----------|----------------------------|------------------------|
| San Diego   | 21.1     | 63.1                       | 34.8                   |
| San Francisco   | 10.9     | 42.1                       | 21.5                   |
| San Joaquin   | 26.6     | 77.8                       | 44.2                   |
| San Luis Obispo   | 18.3     | 66.8                       | 41.7                   |
| San Mateo   | 14.4     | 50.1                       | 32.5                   |
| Santa Barbara   | 19.0     | 53.8                       | 39.8                   |
| Santa Clara   | 21.1     | 48.2                       | 40.9                   |
| Santa Cruz  | 15.5     | 56.0                       | 41.4                   |
| Shasta  | 27.5     | 60.0                       | 32.0                   |
| Solano  | 26.1     | 58.7                       | 45.2                   |
| Sonoma  | 20.7     | 60.7                       | 42.0                   |
| Stanislaus  | 34.3     | *                          | 47.5                   |
| Sutter  | 29.2     | *                          | 44.5                   |
| Tehama, Glenn, Colusa                                     | 30.1     | *                          | 36.8                   |
| Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono, Alpine | 17.3     | *                          | 35.0                   |
| Tulare  | 36.1     | 71.0                       | 44.2                   |
| Ventura   | 24.8     | 60.4                       | 39.0                   |
| Yolo  | 13.9     | 62.4                       | 37.3                   |
| Yuba  | 30.9     | 62.9                       | 50.5                   |

2005 California Health Interview Survey  
 \*Indicates results not statistically reliable

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## SODA CONSUMPTION AND ITS LINK TO OBESITY IN CALIFORNIA

Percentage of Adults, Adolescents and Children Drinking One or More Sodas per Day by City (page 1 of 3)

| City or Census Designated Place | % Adults (age 18 and over) | % Children and Adolescents (ages 2-17) |
|---------------------------------|----------------------------|--|
| Anaheim                         | 26.5                       | 45.4                                   |
| Antioch                         | 21.9                       | 44.8                                   |
| Bakersfield                     | 33.9                       | 60.1                                   |
| Baldwin Park                    | 29.0                       | 52.2                                   |
| Bellflower                      | 30.9                       | 51.3                                   |
| Buena Park                      | 24.5                       | 44.0                                   |
| Burbank                         | 19.6                       | 48.3                                   |
| Carlsbad                        | 16.3                       | 43.5                                   |
| Carson                          | 25.0                       | 52.7                                   |
| Chino                           | 31.2                       | 56.3                                   |
| Chino Hills                     | 22.2                       | 52.4                                   |
| Chula Vista                     | 23.1                       | 46.2                                   |
| Citrus Heights                  | 21.9                       | 39.4                                   |
| Clovis                          | 27.0                       | 53.8                                   |
| Compton                         | 33.2                       | 54.7                                   |
| Concord                         | 21.5                       | 44.2                                   |
| Corona                          | 29.6                       | 50.7                                   |
| Costa Mesa                      | 25.0                       | 43.5                                   |

| City or Census Designated Place | % Adults (age 18 and over) | % Children and Adolescents (ages 2-17) |
|---------------------------------|----------------------------|--|
| Daly City                       | 13.7                       | 38.3                                   |
| Downey                          | 29.6                       | 51.4                                   |
| East Los Angeles *              | 38.4                       | 53.3                                   |
| El Cajon                        | 22.2                       | 47.6                                   |
| El Monte                        | 29.2                       | 51.8                                   |
| Elk Grove *                     | 21.2                       | 43.3                                   |
| Escondido                       | 22.6                       | 48.1                                   |
| Fairfield                       | 26.5                       | 47.0                                   |
| Florence-Graham *               | 36.5                       | 54.2                                   |
| Fontana                         | 31.9                       | 57.5                                   |
| Fremont                         | 14.1                       | 38.0                                   |
| Fresno                          | 33.5                       | 57.4                                   |
| Fullerton                       | 23.6                       | 44.0                                   |
| Garden Grove                    | 24.0                       | 43.9                                   |
| Glendale                        | 19.6                       | 47.6                                   |
| Hawthorne                       | 31.4                       | 53.2                                   |
| Hayward                         | 18.4                       | 41.3                                   |
| Hesperia                        | 27.2                       | 55.5                                   |

2005 California Health Interview Survey

Note: includes only cities in which the population of children and adolescents ages 2-17 was at least 20,000

\*Indicates census designated place

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## SODA CONSUMPTION AND ITS LINK TO OBESITY IN CALIFORNIA

### Percentage of Adults, Adolescents and Children Drinking One or More Sodas per Day by City (page 2 of 3)

| City or Census Designated Place | % Adults (age 18 and over) | % Children and Adolescents (ages 2-17) |
|---------------------------------|----------------------------|--|
| Huntington Beach                | 20.7                       | 40.7                                   |
| Indio                           | 37.5                       | 55.6                                   |
| Inglewood                       | 32.6                       | 55.0                                   |
| Irvine                          | 19.5                       | 43.6                                   |
| Lancaster                       | 30.7                       | 54.8                                   |
| Livermore                       | 15.1                       | 41.1                                   |
| Long Beach                      | 27.2                       | 51.5                                   |
| Los Angeles                     | 24.8                       | 51.9                                   |
| Lynwood                         | 33.3                       | 53.5                                   |
| Merced                          | 33.3                       | 61.9                                   |
| Mission Viejo                   | 18.0                       | 43.3                                   |
| Modesto                         | 31.8                       | 57.0                                   |
| Moreno Valley                   | 33.7                       | 55.4                                   |
| Murrieta                        | 26.5                       | 49.7                                   |
| Norwalk                         | 31.0                       | 51.5                                   |
| Oakland                         | 20.6                       | 44.1                                   |
| Oceanside                       | 20.8                       | 47.7                                   |
| Ontario                         | 32.9                       | 57.7                                   |

| City or Census Designated Place | % Adults (age 18 and over) | % Children and Adolescents (ages 2-17) |
|---------------------------------|----------------------------|--|
| Orange                          | 22.6                       | 46.0                                   |
| Oxnard                          | 30.0                       | 50.6                                   |
| Palmdale                        | 32.1                       | 54.9                                   |
| Pasadena                        | 22.9                       | 54.2                                   |
| Pomona                          | 29.5                       | 56.6                                   |
| Rancho Cucamonga                | 26.0                       | 54.6                                   |
| Redding                         | 25.3                       | 44.2                                   |
| Rialto                          | 32.8                       | 59.4                                   |
| Richmond                        | 28.4                       | 46.1                                   |
| Riverside                       | 31.7                       | 49.8                                   |
| Roseville                       | 16.4                       | 43.6                                   |
| Sacramento                      | 25.4                       | 44.3                                   |
| Salinas                         | 28.9                       | 46.9                                   |
| San Bernardino                  | 32.7                       | 58.6                                   |
| San Buenaventura (Ventura)      | 22.3                       | 46.6                                   |
| San Diego                       | 22.8                       | 46.2                                   |
| San Francisco                   | 11.5                       | 36.9                                   |
| San Jose                        | 21.7                       | 42.8                                   |

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\*Indicates census designated place

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Percentage of Adults, Adolescents and Children Drinking One or More Sodas per Day by City (page 3 of 3)

| City or Census Designated Place | % Adults (age 18 and over) | % Children and Adolescents (ages 2-17) |
|---------------------------------|----------------------------|--|
| Santa Ana                       | 33.2                       | 47.3                                   |
| Santa Clara                     | 19.2                       | 40.6                                   |
| Santa Clarita                   | 20.6                       | 49.9                                   |
| Santa Maria                     | 24.1                       | 48.3                                   |
| Santa Rosa                      | 19.7                       | 45.4                                   |
| Simi Valley                     | 20.5                       | 44.0                                   |
| South Gate                      | 36.8                       | 52.9                                   |
| Stockton                        | 28.1                       | 57.3                                   |
| Sunnyvale                       | 18.7                       | 39.8                                   |
| Temecula                        | 28.2                       | 47.8                                   |
| Thousand Oaks                   | 19.8                       | 43.8                                   |
| Torrance                        | 18.9                       | 46.0                                   |
| Tracy                           | 24.9                       | 56.9                                   |
| Vacaville                       | 25.4                       | 45.4                                   |
| Vallejo                         | 25.7                       | 48.8                                   |
| Victorville                     | 29.2                       | 57.0                                   |
| Visalia                         | 30.8                       | 56.3                                   |
| Vista                           | 23.8                       | 48.8                                   |
| West Covina                     | 21.6                       | 50.4                                   |
| Westminster                     | 22.4                       | 42.8                                   |

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Note: includes only cities in which the population of children and adolescents ages 2-17 was at least 20,000

\*Indicates census designated place

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## Recommendations

### What Individuals Can Do

Reduce consumption of soda and other sugar-sweetened beverages for you and your family.

### What Hospitals, Workplaces, Religious Institutions, and Other Community Organizations Can Do

- Incorporate information about soda and other sugar-sweetened beverages into workplace wellness programs.
- Limit or replace soda and other sugar-sweetened beverages in vending machines.
- Provide and sell healthy beverages at programs and events, especially those attended by children and adolescents.
- Limit or exclude soda and other sugar-sweetened beverage advertising and sponsorship of events, sports leagues, facilities and programs.

### What Cities and Counties Can Do

- Provide and sell only healthy beverages at city and county sponsored events especially those attended by children and adolescents (e.g., preschool programs, after-school programs, parks and recreation).
- Limit or exclude soda and other sugar-sweetened beverages in vending machines in property owned or leased by cities or counties.

- Limit or exclude soda and other sugar-sweetened beverage advertising and sponsorship at city and county events, sports leagues, facilities and programs.
- Place a surcharge on soda and other sugar-sweetened beverages and use revenue for obesity prevention efforts such as after-school programs, physical education in schools, healthy school food programs, and improvements in parks and recreation programs.

### What the California Legislature Can Do

- Impose an industry fee on soda and other sugar-sweetened beverages and earmark funds for community-based prevention programs, with funds going to communities in proportion to their consumption levels.
- Prohibit marketing of soda and other sugar-sweetened beverages on public school campuses K-12.

### What Congress Can Do

- Tax soda and other sugar-sweetened beverages and earmark the revenues for community-based prevention programs, with funds going to communities in proportion to their consumption levels.
- Require the Federal Trade Commission to develop and implement standards for soda and other sugar-sweetened beverage advertising aimed at children under age 12.

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## *Organizational Backgrounder*



The California Center for Public Health Advocacy (CCPHA) is an independent, nonpartisan, nonprofit organization that raises awareness about public health issues and mobilizes communities to promote the establishment of effective state and local health policies. CCPHA is currently supported by grants from First 5 LA, The California Endowment, the Vitamin Cases Consumer Settlement Fund, Kaiser Permanente (North and South), Mental Insight Foundation and The Robert Wood Johnson Foundation, as well as by private contributions.



The UCLA Center for Health Policy Research is one of the nation's leading health policy research centers and the premier source of health policy information for California. The UCLA Center for Health Policy Research improves the public's health by advancing health policy through research, public service, community partnership, and education. Established in 1994, the UCLA Center for Health Policy Research is based in the UCLA School of Public Health and affiliated with the UCLA School of Public Affairs.