

*Ten Years of Research on
Sugar Sweetened Beverages and Obesity*
Where We've Been...
Where We're Going...

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UC Berkeley

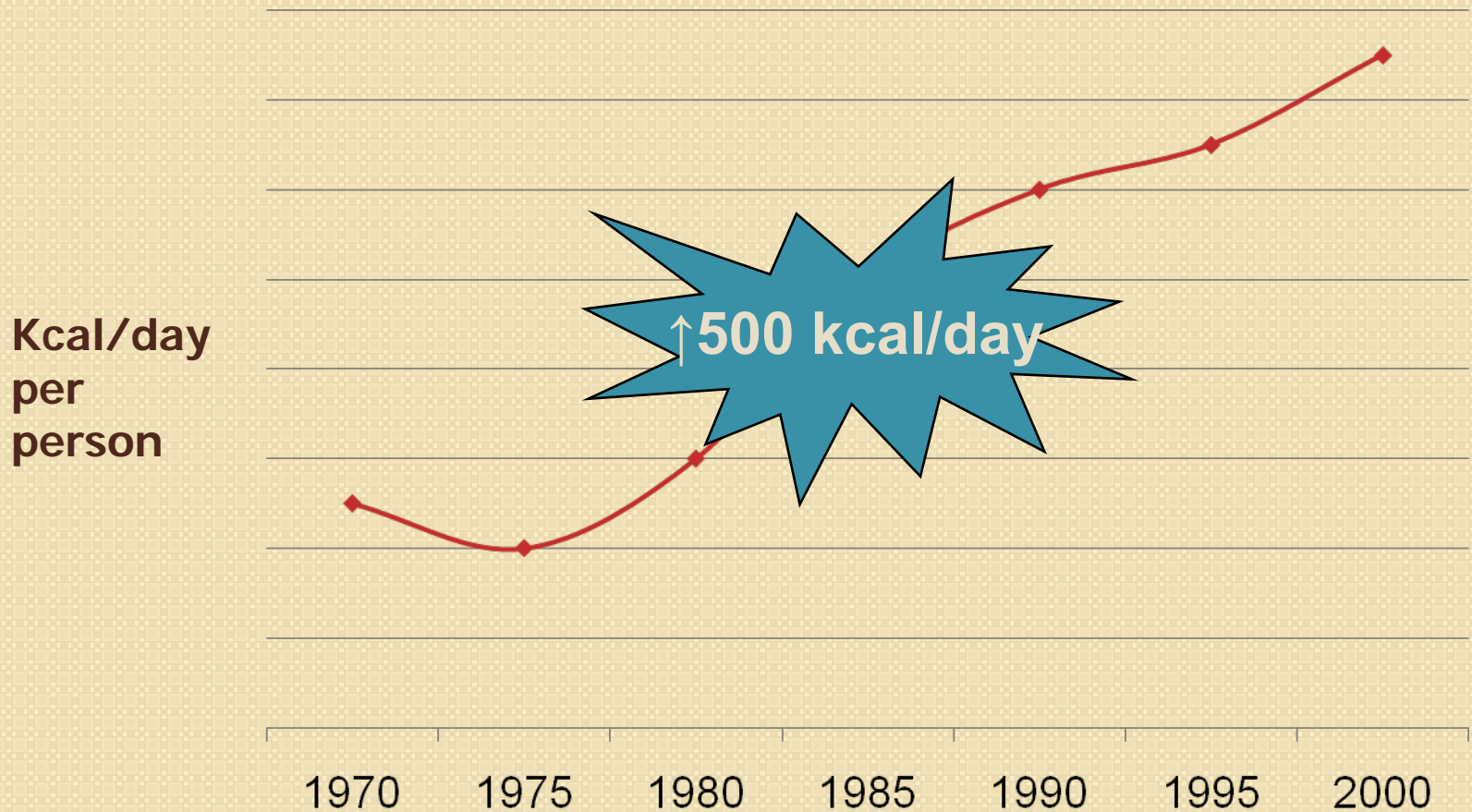
Dr. Robert C. and Veronica Atkins
Center for Weight and Health

BANBAC

April 28, 2010

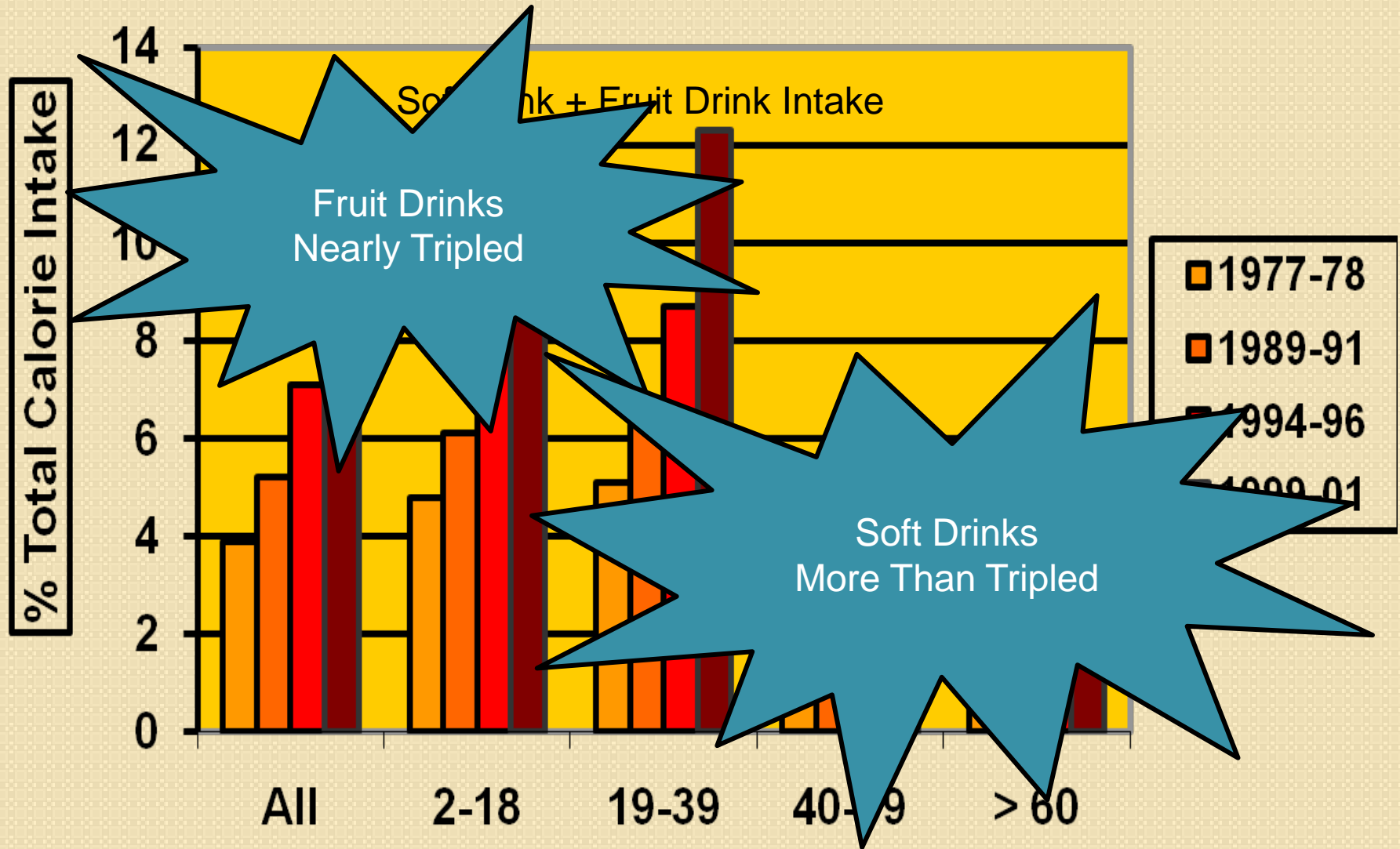
2000

Dietary Energy in Food Supply

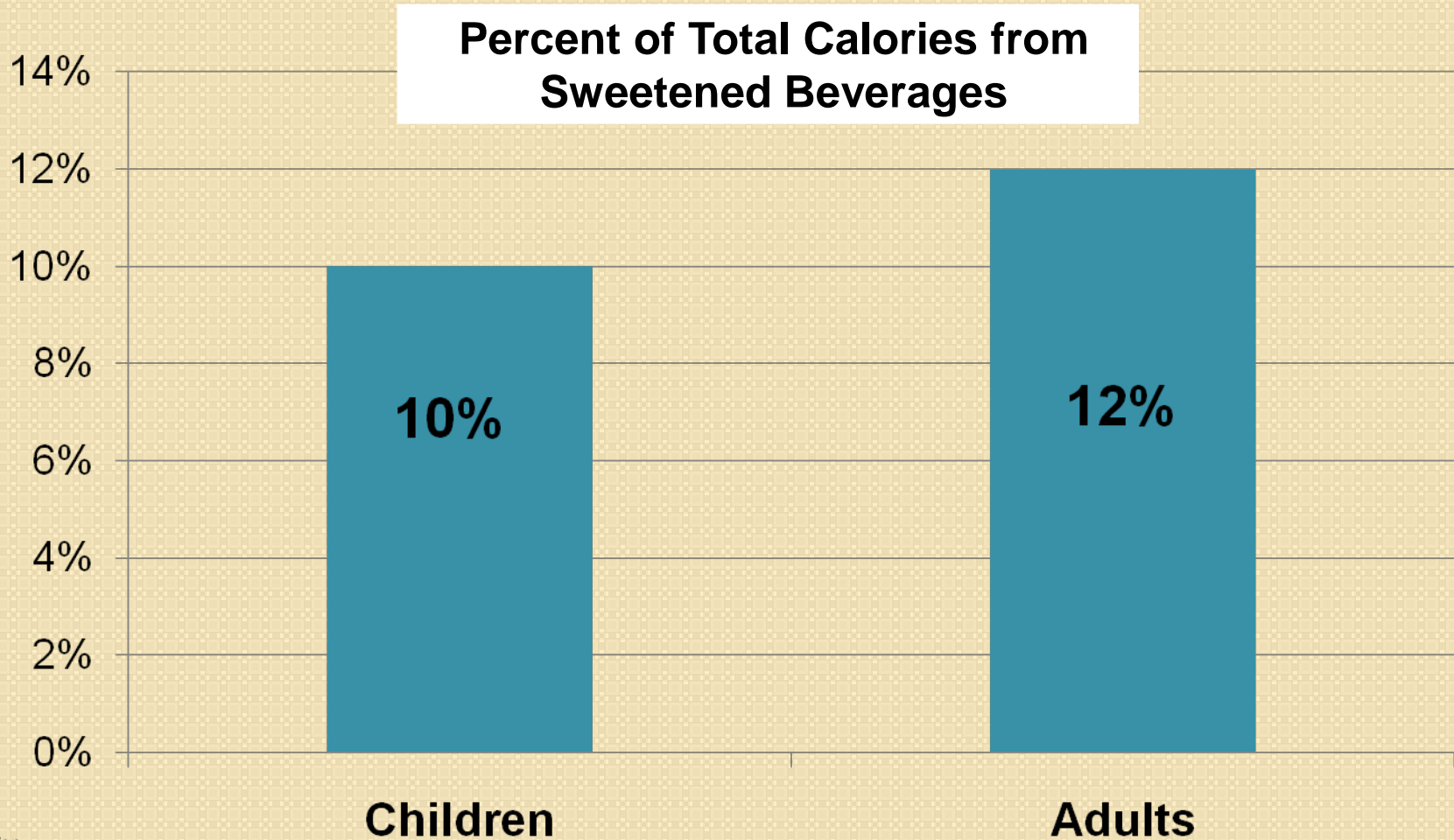


(Source: Putnam, 2002)

Sweetened Beverage Consumption Has Increased

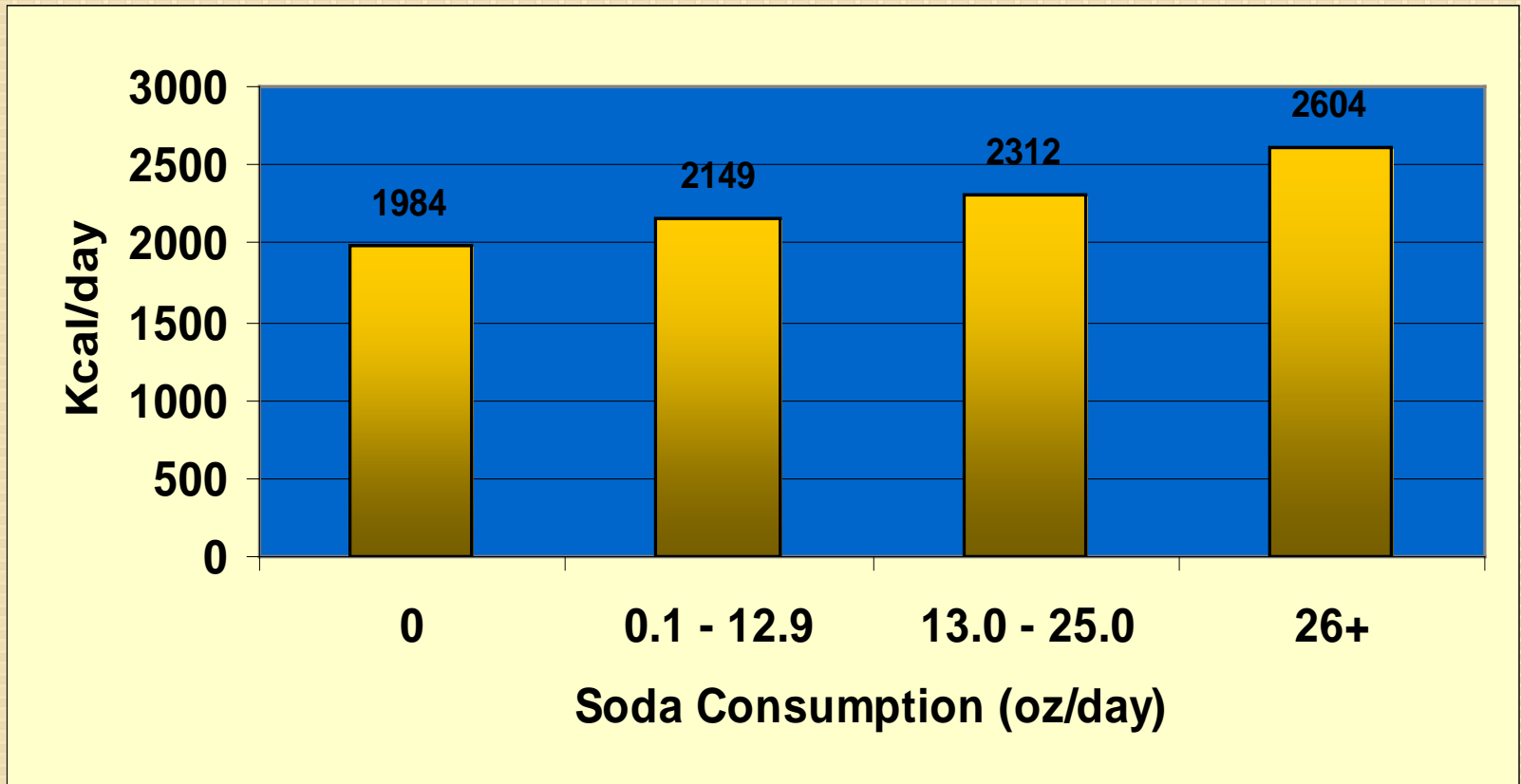


Soft drinks Largest Source of Liquid Calories in U.S. Diet



Soda Up = Calories Up

- *Daily calories higher on days when an energy-containing beverages consumed*



Portion Sizes Have Increased

fl oz

20

32

44

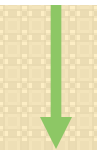
64



6.5 fl oz



88 cals



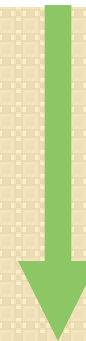
250



400



550



800

Calories

Not Just Soda

Soda Orange Drink Sweetened Tea Drink Tamarindo Big Pouch Grass Jelly Drink Sports Drink Water



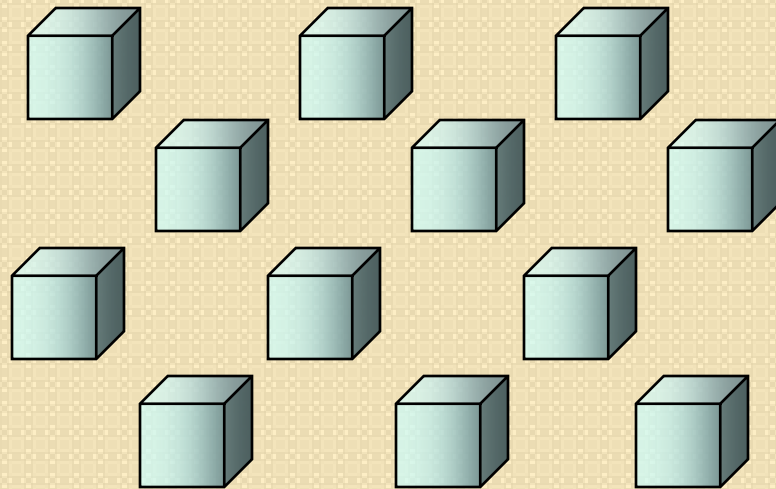
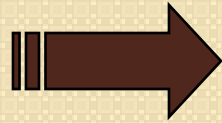
20 oz. 16 oz. 16 oz. 13.5 oz. 11.25 oz. 11 oz. 20 oz.

Calories **240** **260** **220** **186** **152** **143** **140** **0**

Teaspoons of Sugar **17** **15** **13** **12** **9.5** **8.6** **9** **0**

(Source: BANPAC)

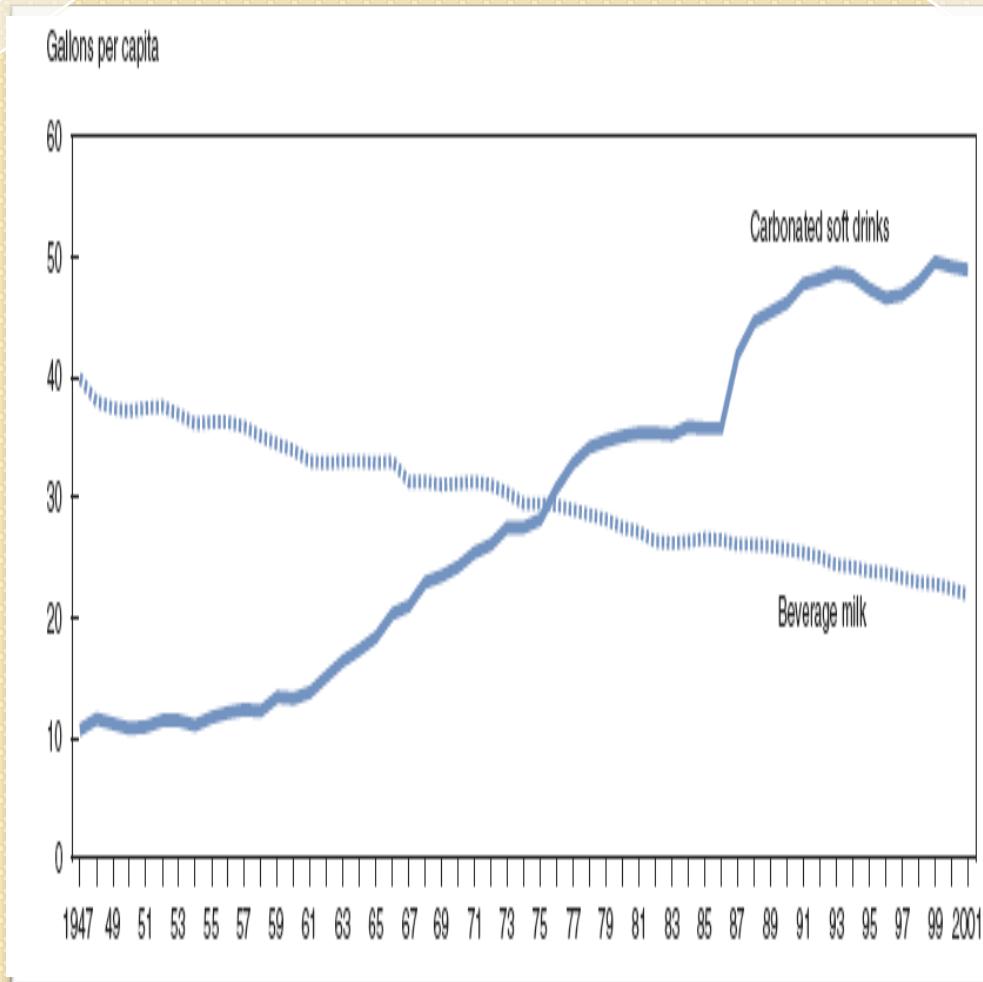
How Much Sugar is in Soda?





What is the largest source of added sweeteners for kids?

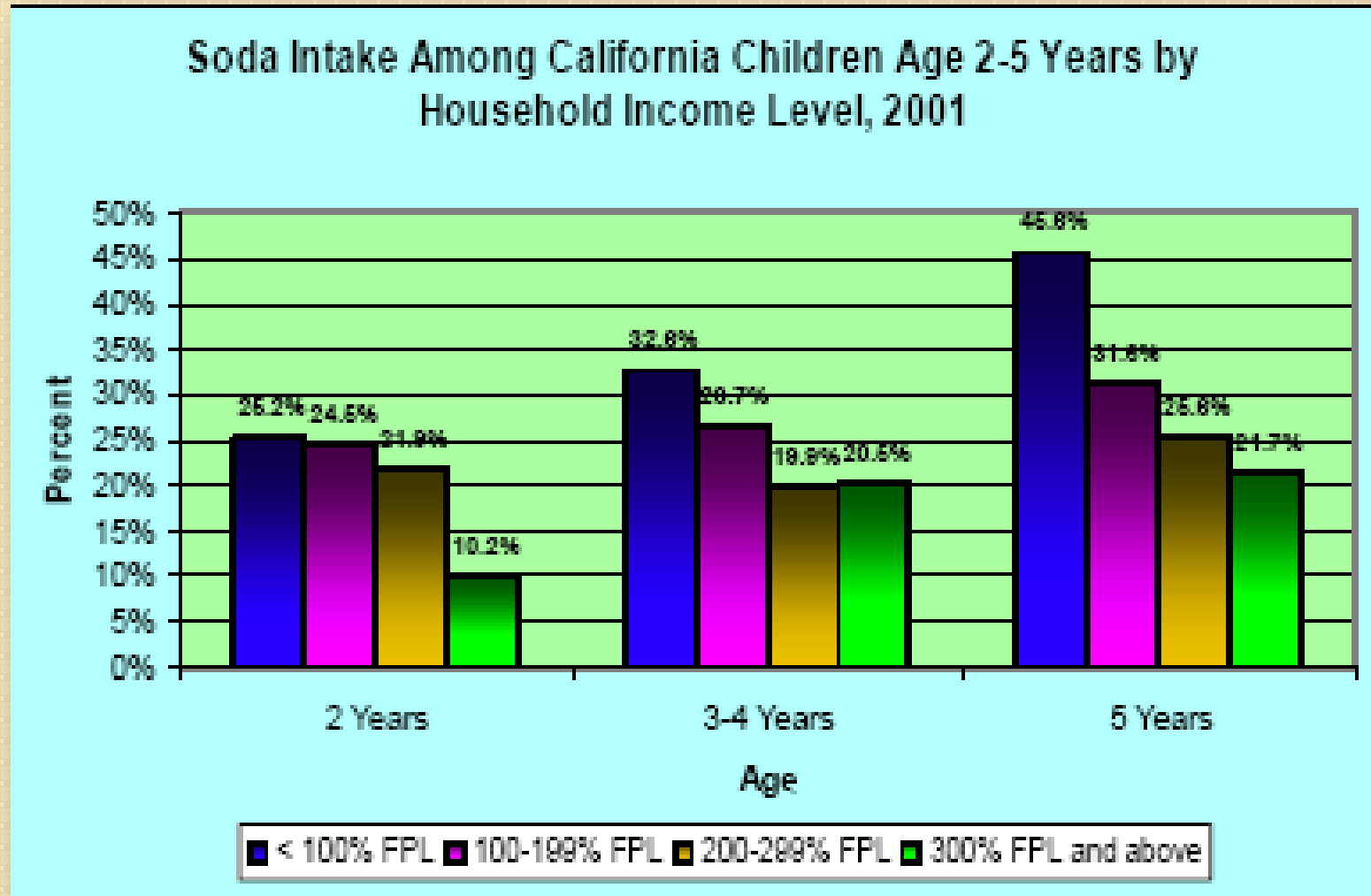
2001



**Soda
Up
=
Milk
Down**

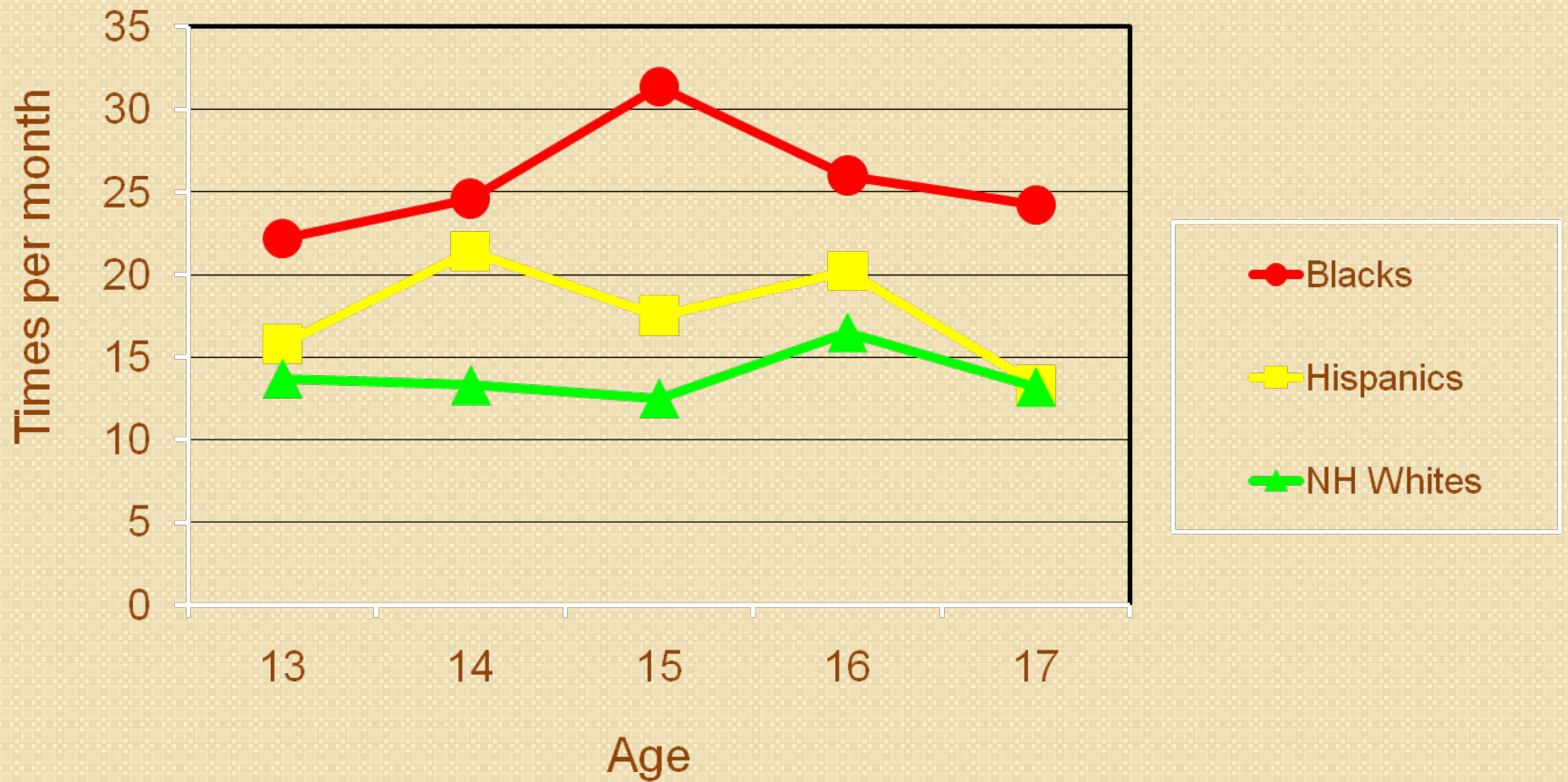
(Source: USDA/ERS, 2004)

Soda Higher with Lower Income



(Source: Inkelas, 2003 – CHIS 2001)

Soda Higher in Minority Groups



(Source: NHANES III)

Soda *Marketing* to Children

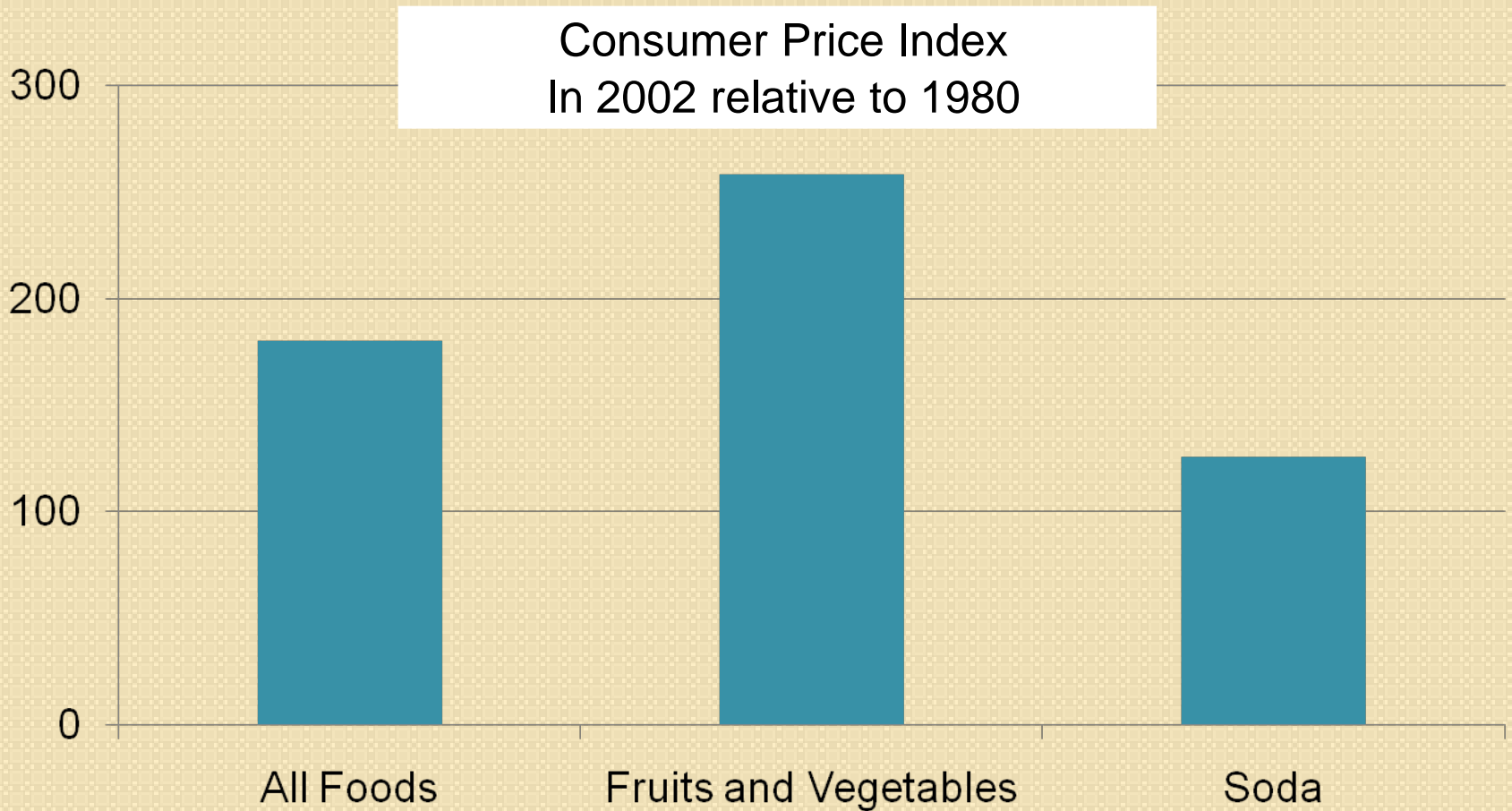


- Advertising budgets nearly doubled in 10-15 years
- \$3.5M contract with Texas School District
- \$60M contract with Boys & Girls club

(Source: Jacobson, 2001)

2002

Soda is Cheap



(Source: Sturm 2005)

Observational Study



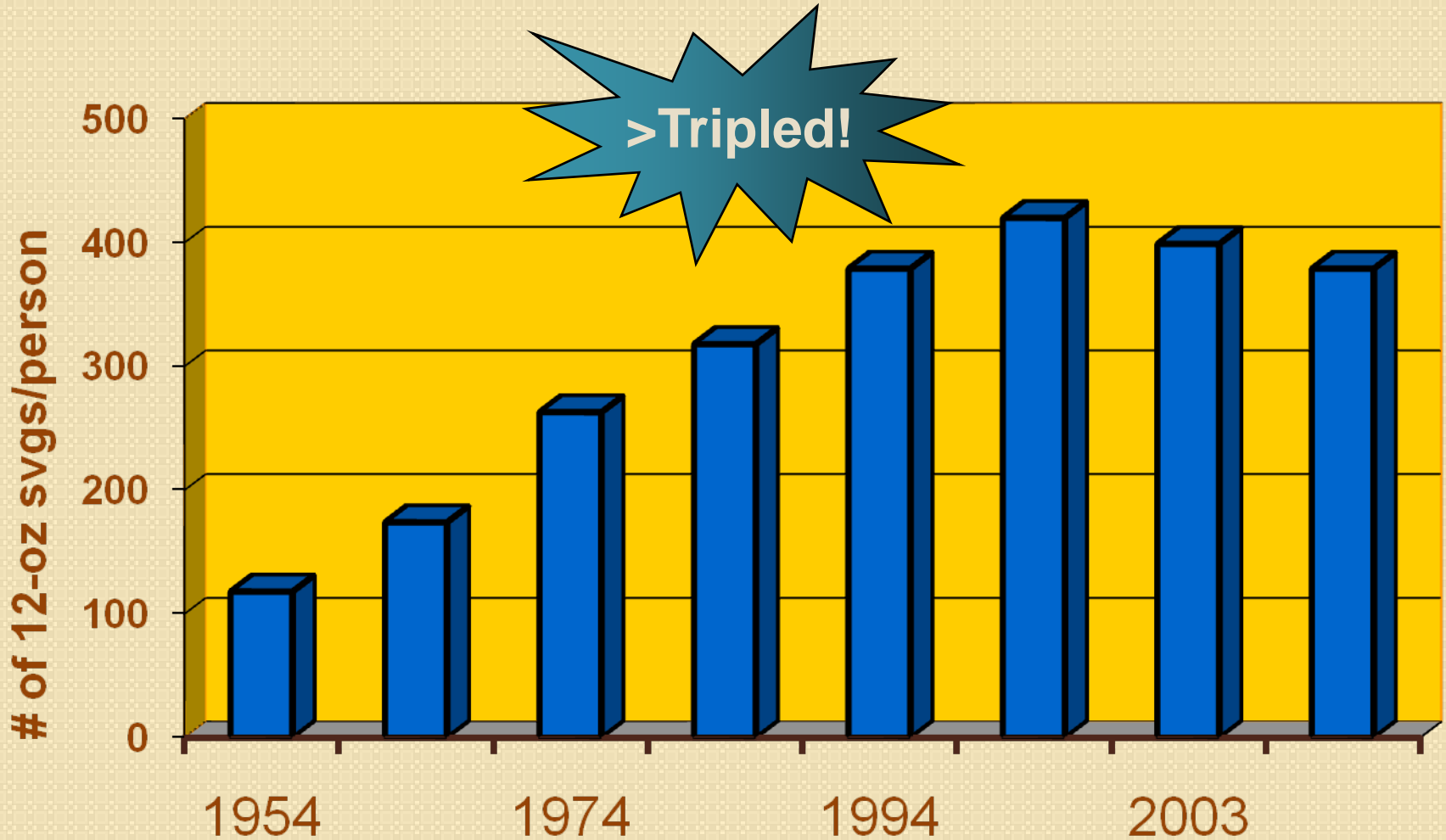
Planet Health

For each additional serving of sweetened beverage consumed over 1.5 years, the *risk of overweight* increased by 60% in children

(Source: Ludwig, 2001)

2003

Annual Soft Drink Production



2004



Observational Study

Women's Health Study

Women who drink soda or sweetened fruit drinks every day more likely to gain weight and develop *type 2 diabetes* as compared to women who drank less

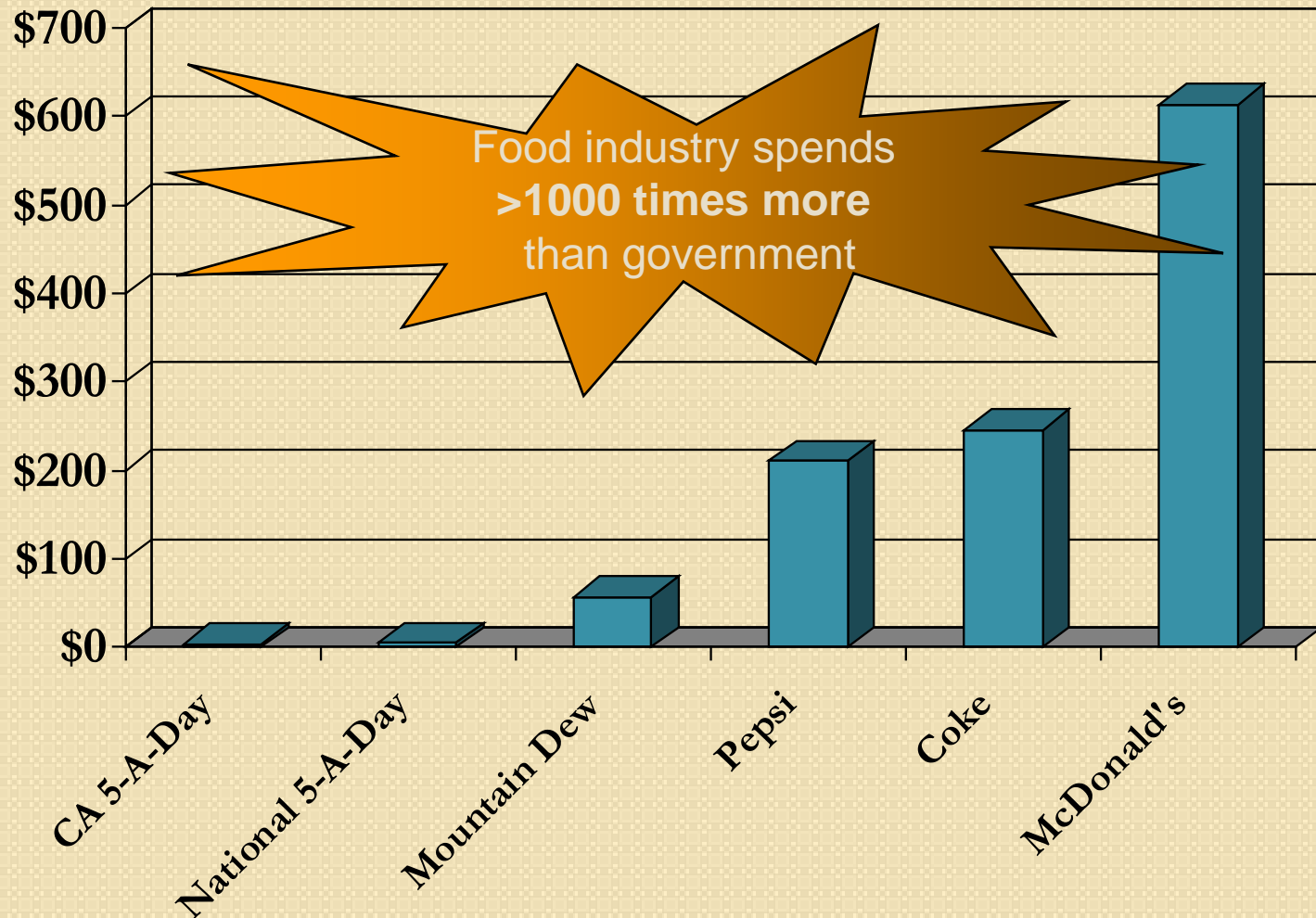
(Source: Schulze, 2004)

A blue scroll graphic with a white border and rounded corners. The scroll is unrolled, showing a white surface. The year "2005" is written in the center of the scroll in a bold, yellow, sans-serif font with a slight shadow effect. The scroll is set against a light beige background with a fine, repeating pattern of small dots.

2005

Advertising Money Talks

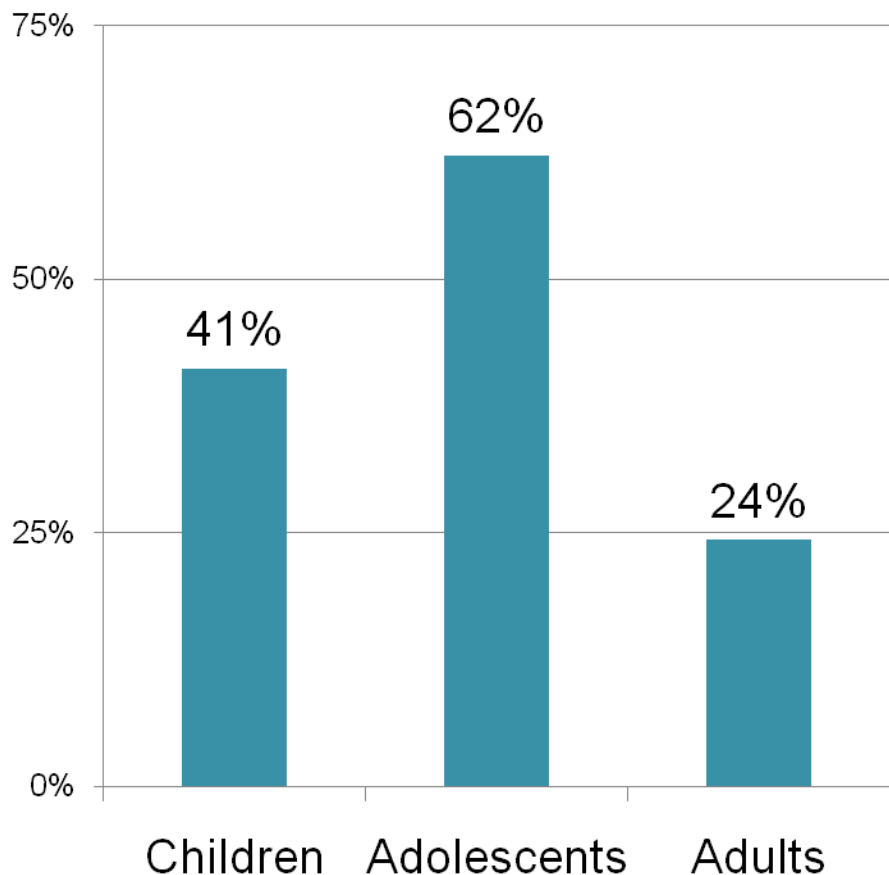
(in millions of dollars)



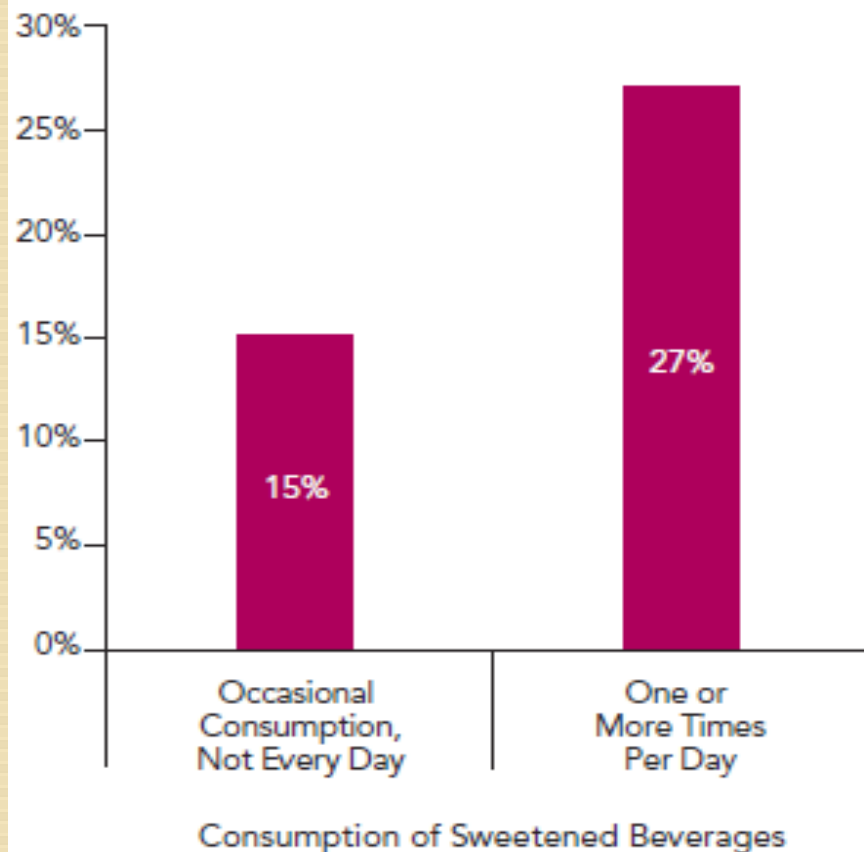
(Source: Advertising Age, 2005)

Californian's Like Their Soda

Many Drinking One or More Sodas Each Day



Adult Overweight Associated with Soda Intake



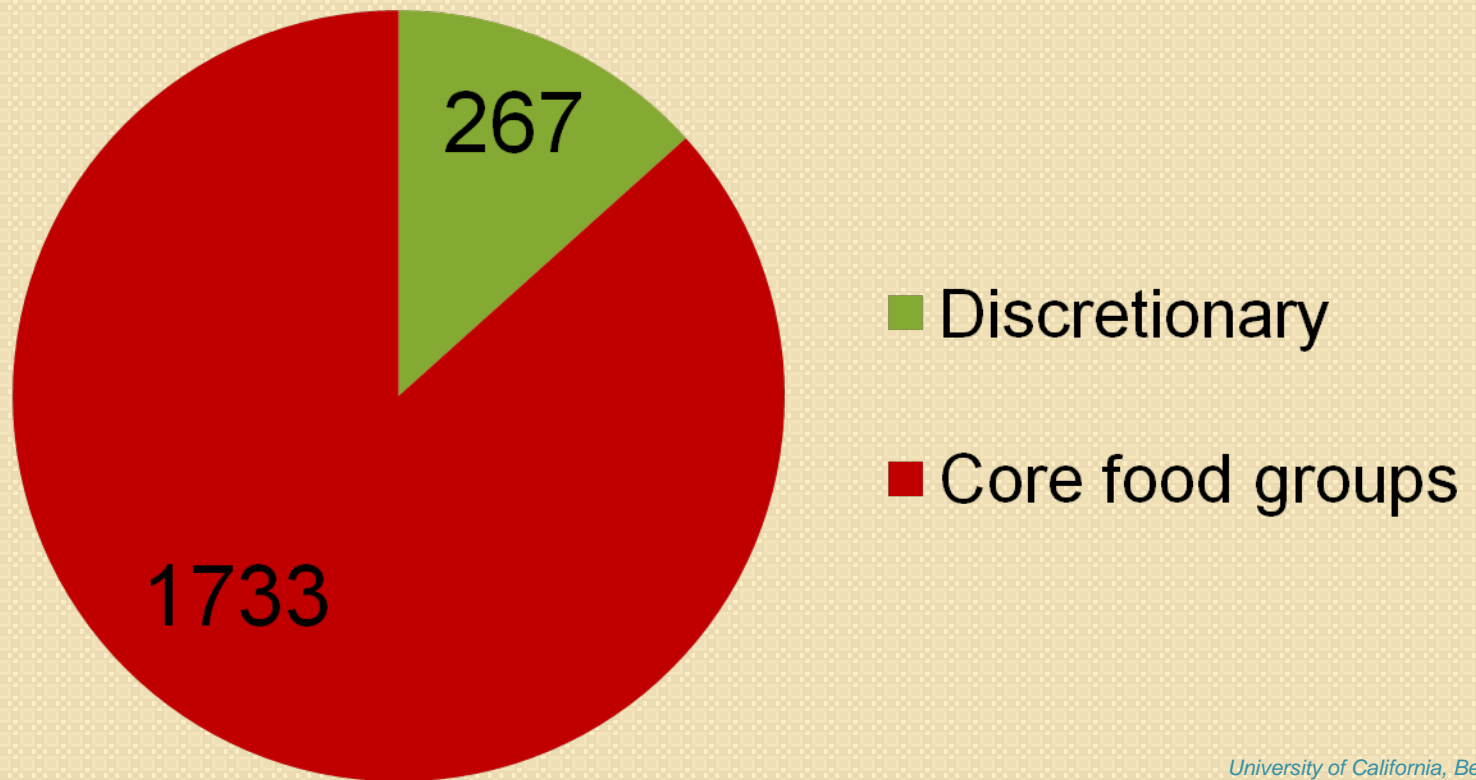
Longitudinal Studies

Study	Duration	Participants	Association
Welsh, 2005	1 year (Missouri)	N = 10,904 2-3 yrs old	+
Berkey, 2004	2 years (U.S.)	N = 12,192 9-14 yrs old	+
Phillips, 2004	4 years (Massachusetts)	N = 196 8-12 yrs old	+

2005 DIETARY GUIDELINES SETS LIMITS ON DISCRETIONARY CALORIES

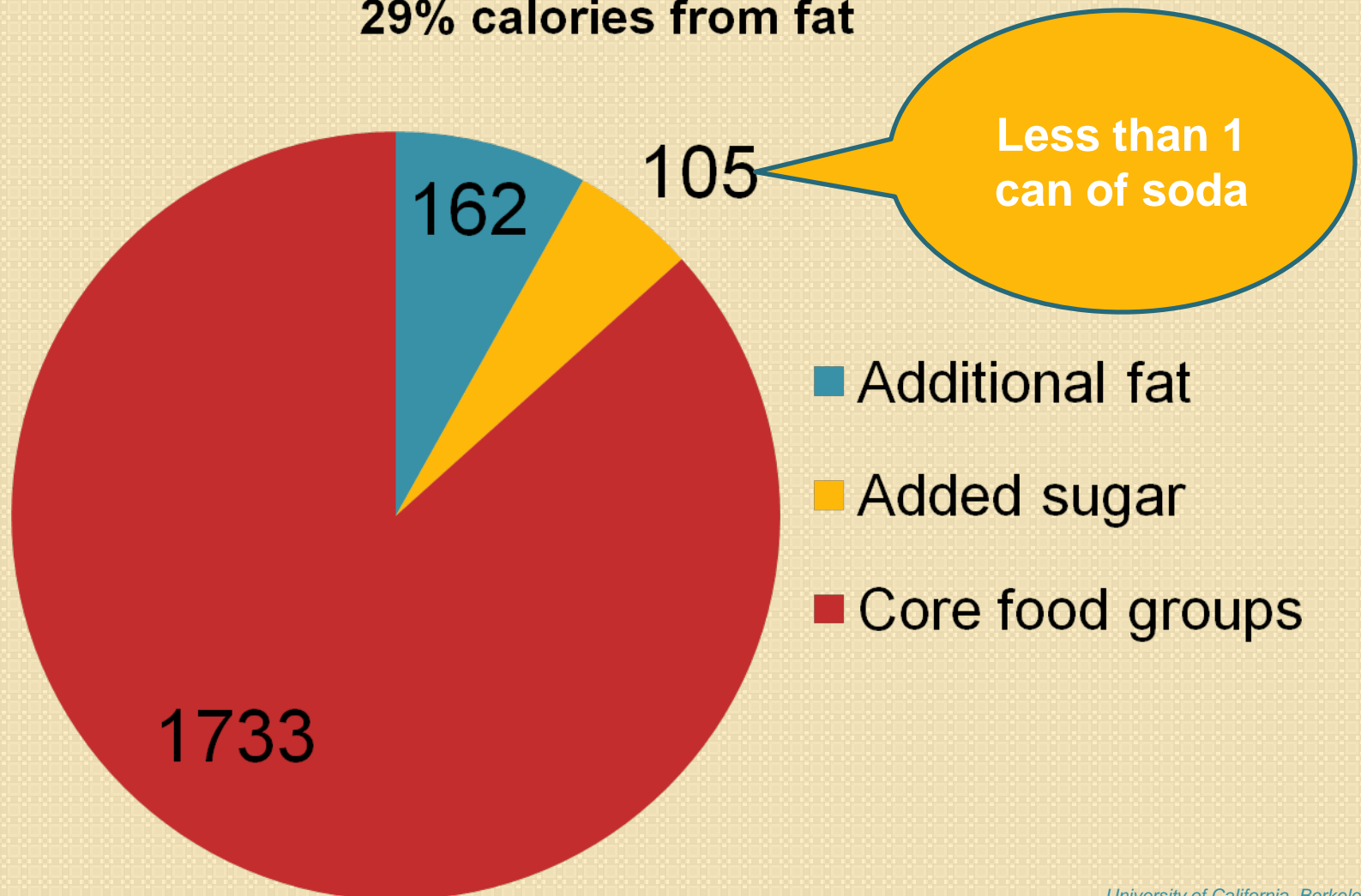
Added sugars, alcohol and additional fat (added or from higher fat options in dairy and meat groups)

Recommended calories for a 2000 calorie diet



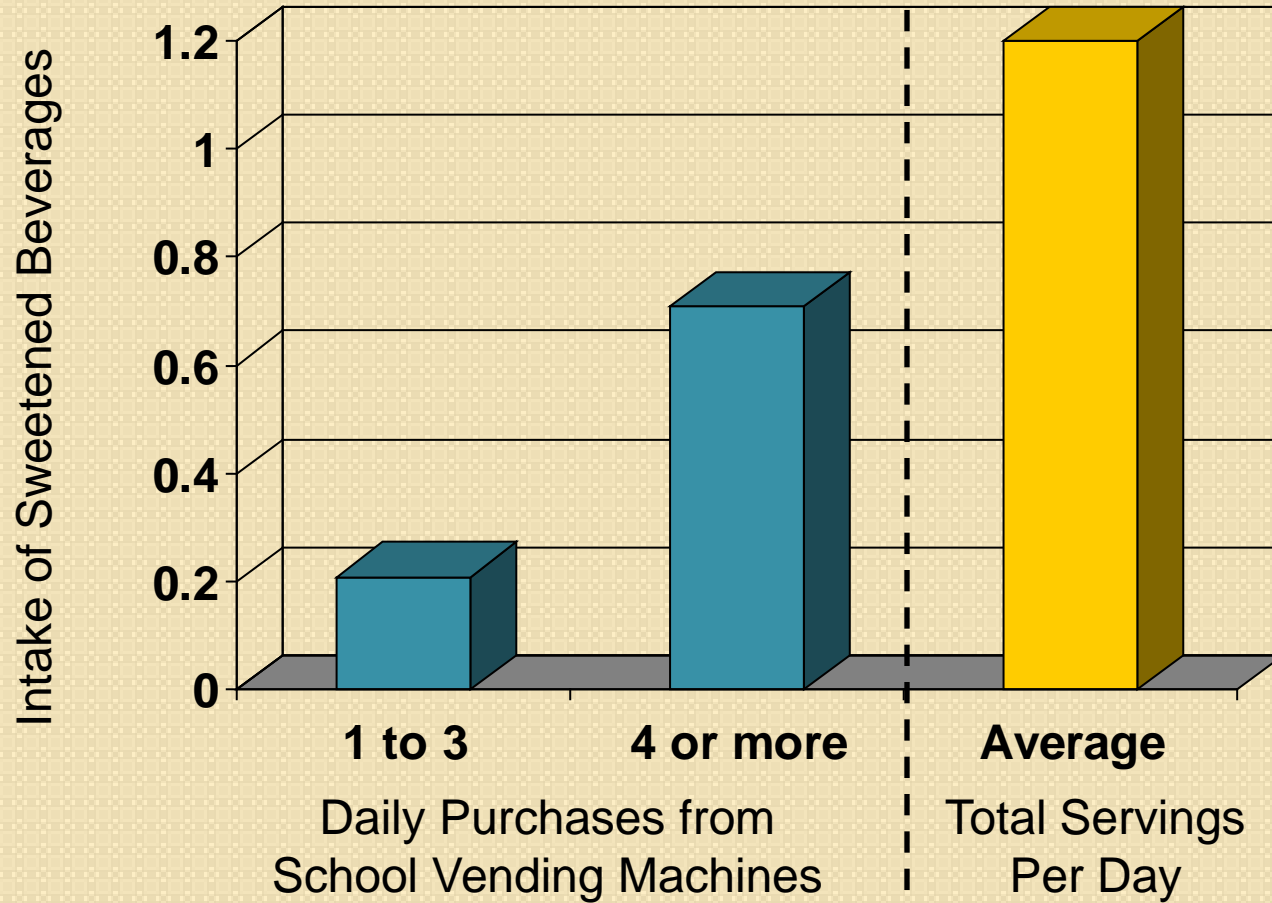
MOST OF US DON'T HAVE 'ROOM' FOR SWEETENED BEVERAGES

Recommended calories for a 2000 calorie diet –
29% calories from fat



2006

School Vending Machines



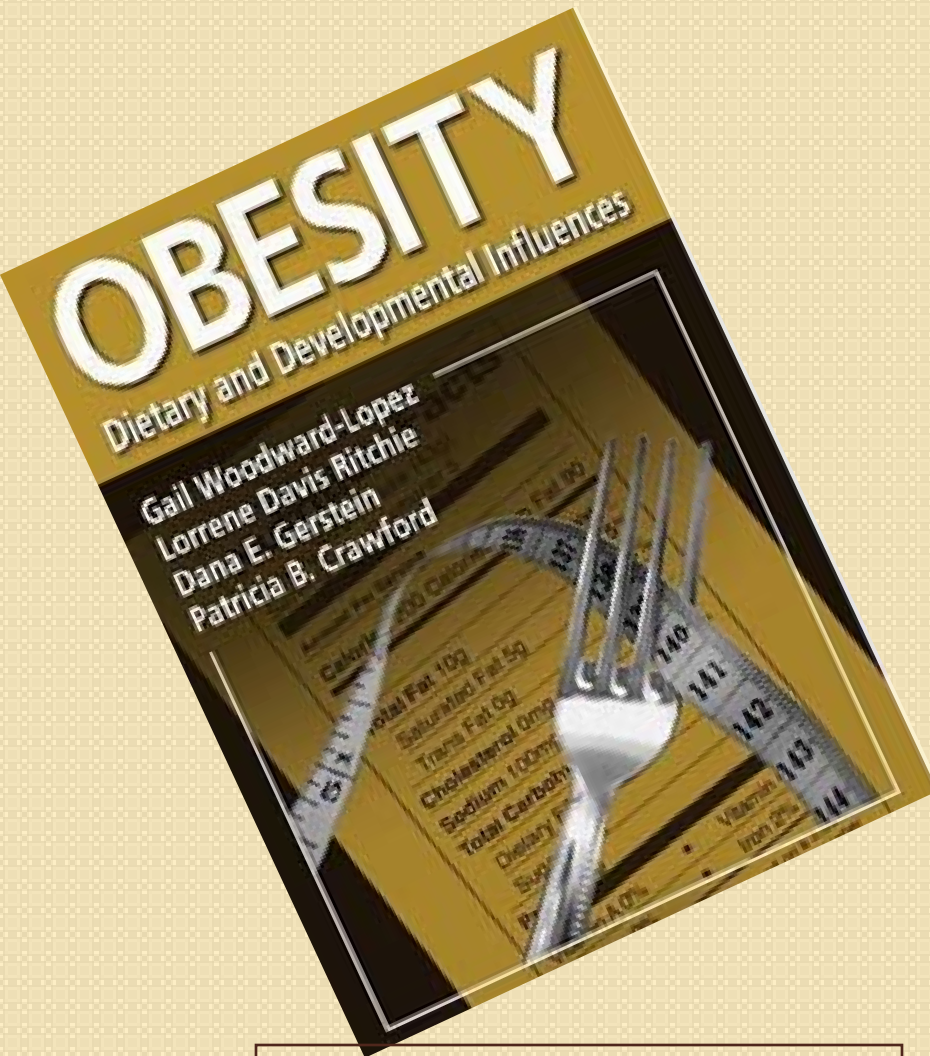
(Source: Wiecha, 2006)

ALLIANCE ASKS BEVERAGE COMPANIES TO FOLLOW SCHOOL BEVERAGE GUIDELINES

Beverages sold on campus during regular and extended school day

- **Elementary**
 - Bottled water
 - Milk or 100% juice – up to 8 oz svgs
- **Middle**
 - Same as elementary except up to 10 oz svgs
- **High School**
 - Up to 12 oz servings
 - No or low-calorie beverages
 - At least 50% or non-milk beverages must be no or low calorie options

Literature Reviews Implicate Soda



Boca Raton: CRC Press. 2006.
www.nutritionnetbase.com

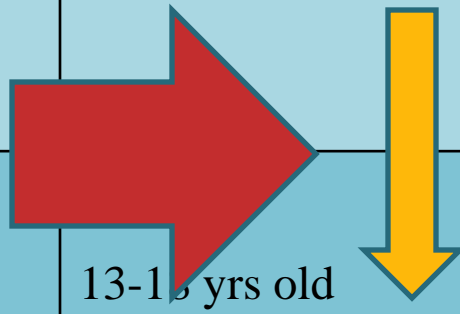
www.adaevidencelibrary.com

Obesity Prevention Trials

Study	Study Design	Subjects	Impact
James, 2004 U.K.	Randomized controlled trial School-based education program <ul style="list-style-type: none"> Four 1-hr sessions 1 year duration 	N = 644 7-11 yrs old 6 schools	Reduced carbonated beverage intake (regular + diet): <ul style="list-style-type: none"> ↓ 0.6 cups/3d - intervention ↑ 0.2 cups/3d - control Reduced overweight: <ul style="list-style-type: none"> ↓ 0.2% - intervention ↑ 7.6% - control
Ehrlich, 2006	Randomized controlled trial Home deliveries of noncaloric beverages to displace sweetened beverages <ul style="list-style-type: none"> 25 weeks duration 	13-15 yrs old regularly consume sweetened beverages	Reduced sweetened beverage intake: <ul style="list-style-type: none"> ↓ 82% - intervention No change - control Reduced BMI: Among subjects in upper BMI-tertile at baseline, sig. diff. between groups <ul style="list-style-type: none"> ↓ 0.63 kg/m² - intervention ↑ 0.12 kg/m² - control

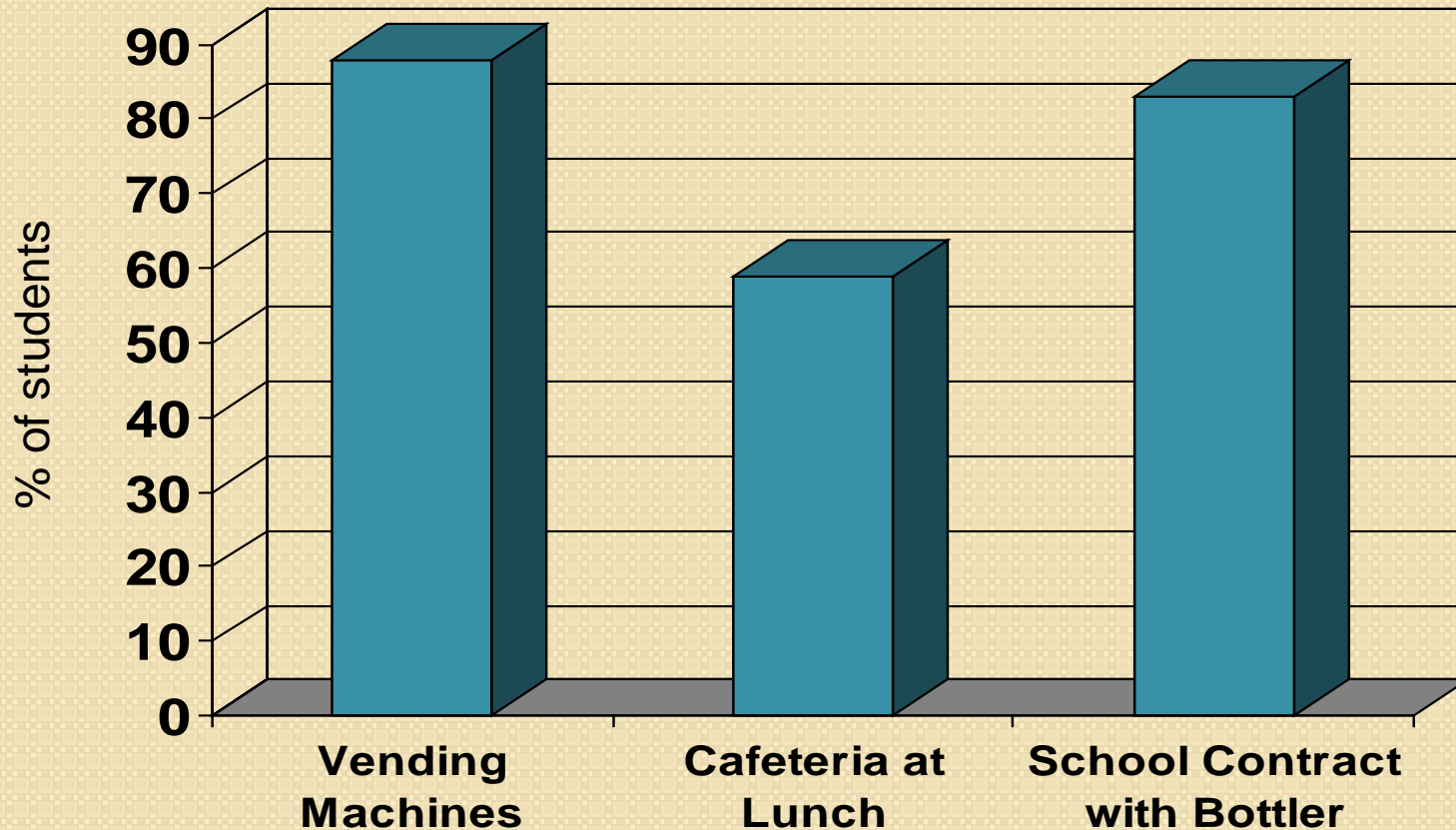
Sweet drinks

Obesity



2007

Soda in High Schools



(Source: Johnston, 2007)

Longitudinal Study



NHLBI Growth and Health Study

**2-fold increase
in soda intake
between 9 and
19 years**

**High soda
intake predicts
increase in
BMI**

(Source: Striegel-Moore & Crawford, 2007)

CALIFORNIA ENACTS MOST PROGRESSIVE LEGISLATION IN COUNTRY ON SODA IN SCHOOLS

2004
SB 677

2007
SB 965

2009

No soda in
elementary &
middle
schools

Reduce soda
by 50% in
high schools

Ban fully
implemented

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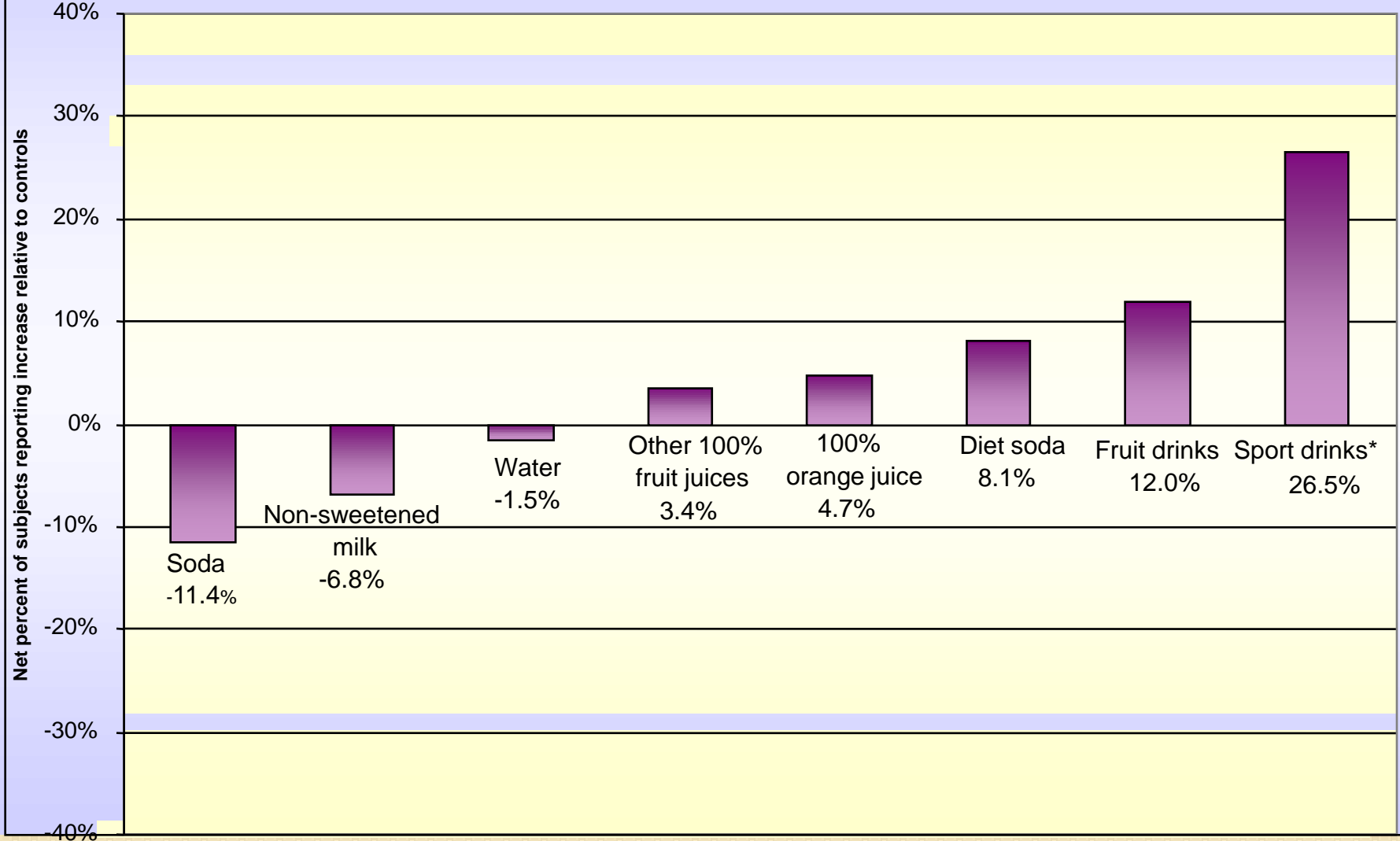


The NEW SCHOOL COKE DEALER

THE NEW SCHOOL COKE DEALER?

Soda Out of Schools (SOS) in high schools

effective and feasible



* $p < .001$

(Source: Crawford, 2005)

2008



Campaign Successes

**At least
100,000
Bay Area
residents
reached in
6 counties**

2009

Proportion of total energy increase from sweetened beverages

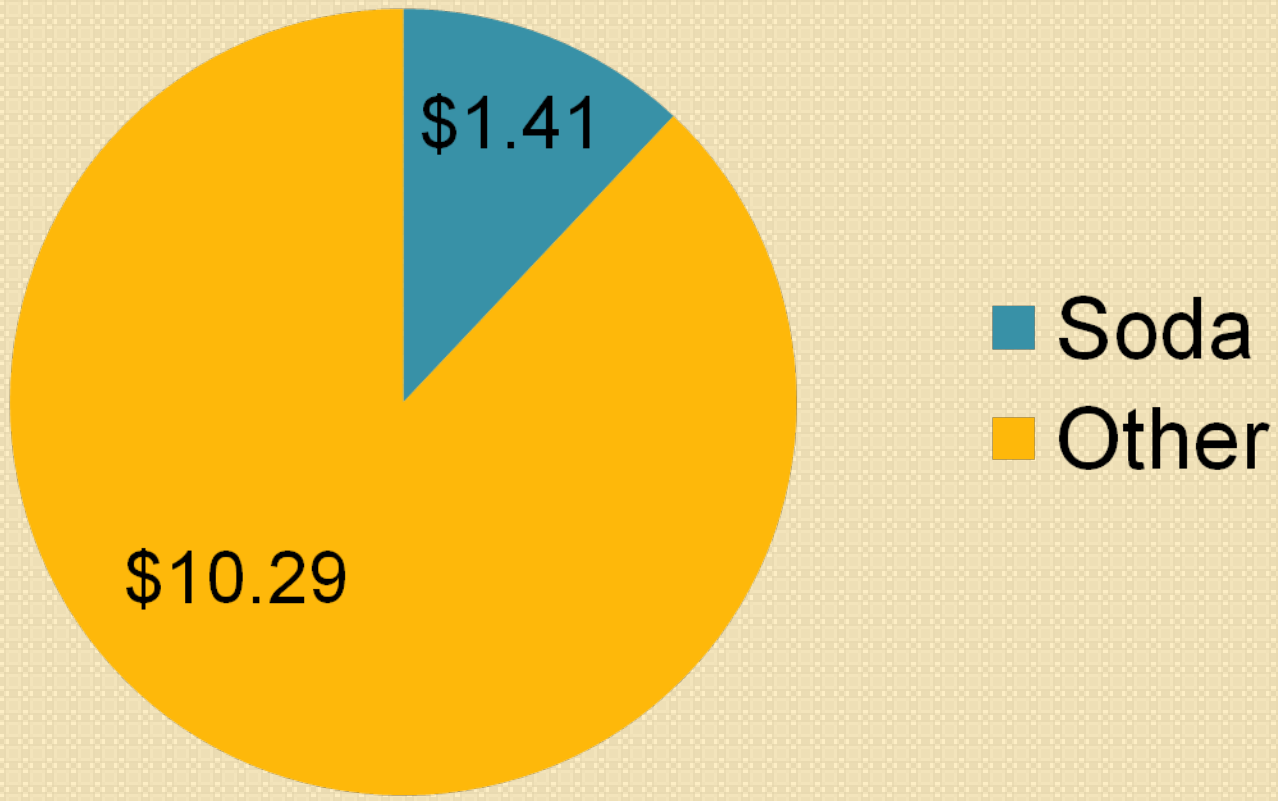
Calories/day	1977-78	1999-2001	Difference	
Total intake	1,790	2,068	278	% of total
Sweet drinks	70	190	120	43%

Soda + fruit drinks account for >1/3 of total increase in energy intake

(Data source: NFCS & CSFII as reported in Nielsen, 2004)

COST OF OBESITY IN CALIFORNIA

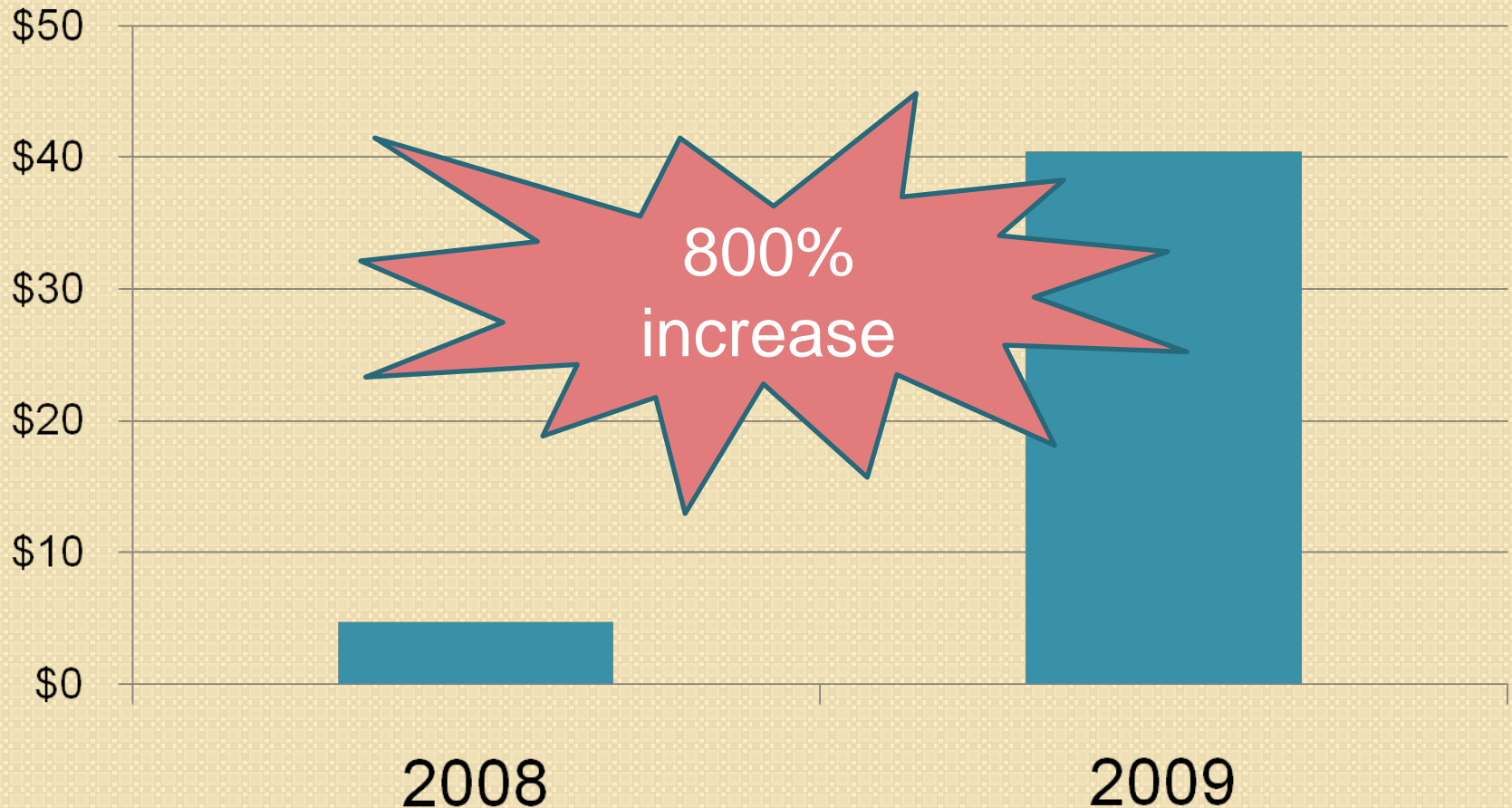
Billions of Dollars



(Source: CCPHA, 2009)

BEVERAGE INDUSTRY CONCERNED?

Millions of Dollars Spent on Lobbying
by American Beverage Assn, Coke & Pepsi



(Source: Center for Responsive Politics, 2009)

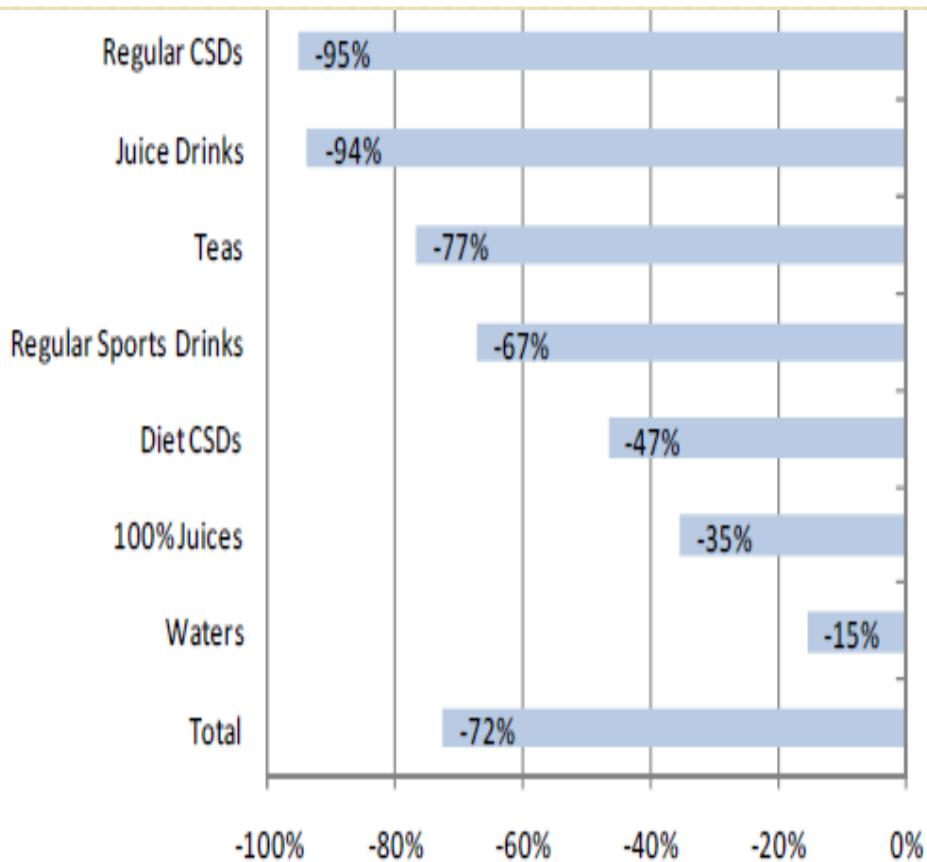
University of California, Berkeley



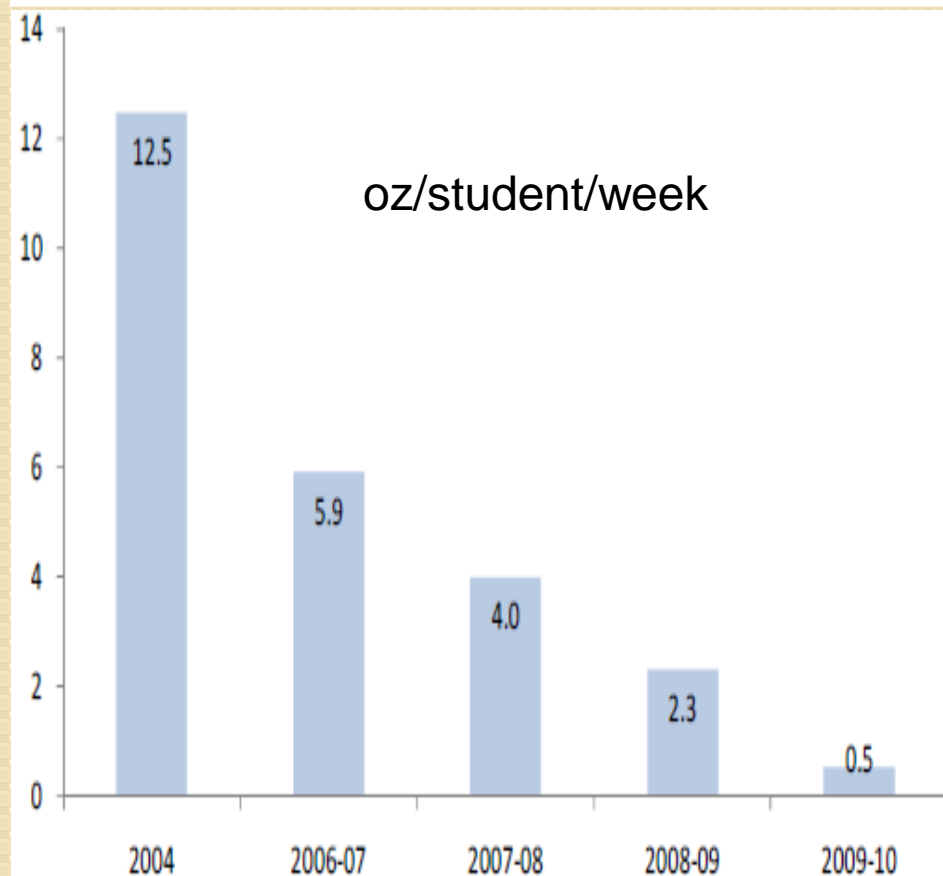
2010

and beyond

Change in Total Volume of Beverage Shipments to Schools



Full-Calorie Sweetened Beverages Shipped to High Schools



Progress in Schools

(American Beverage Association, 2010)

California Obesity Summit



Obama's Let's Move Initiative



State and National Attention

Sweetened Beverages a Problem

- Contribute to excess calorie intake from added sugars or
- Displace more nutritious foods in the diet.

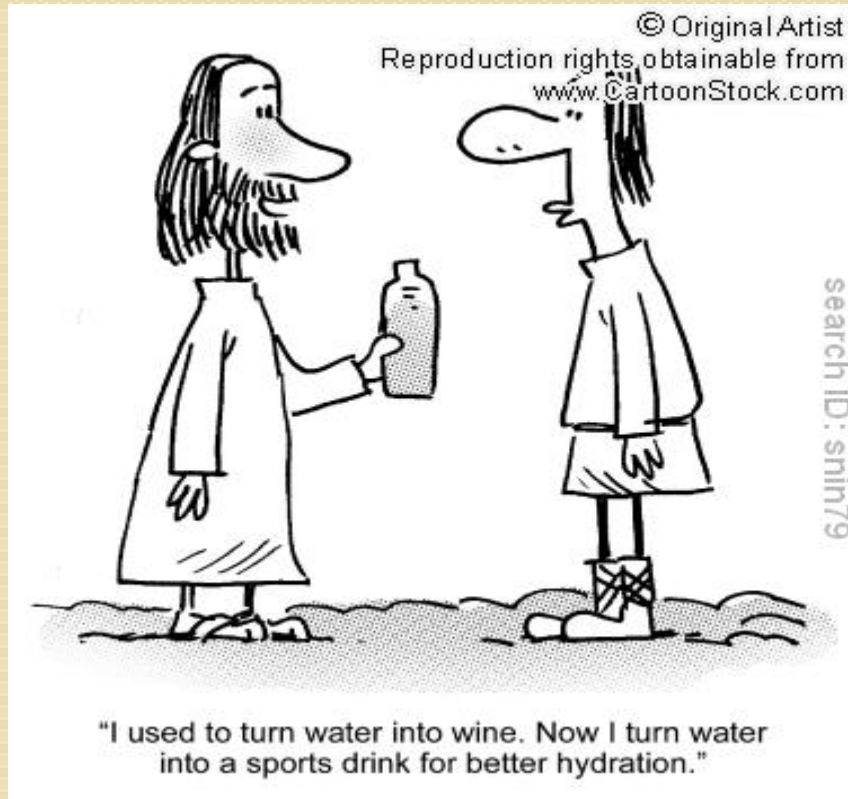


Some Beverage Solutions

- Make sure water is available throughout the school setting.
- Limit amounts of high calorie ... beverages in vending machines.
- Limit advertisements of less-healthy...beverages.

The Surgeon General's Vision for a Healthy and Fit Nation

Other Sweetened Beverages

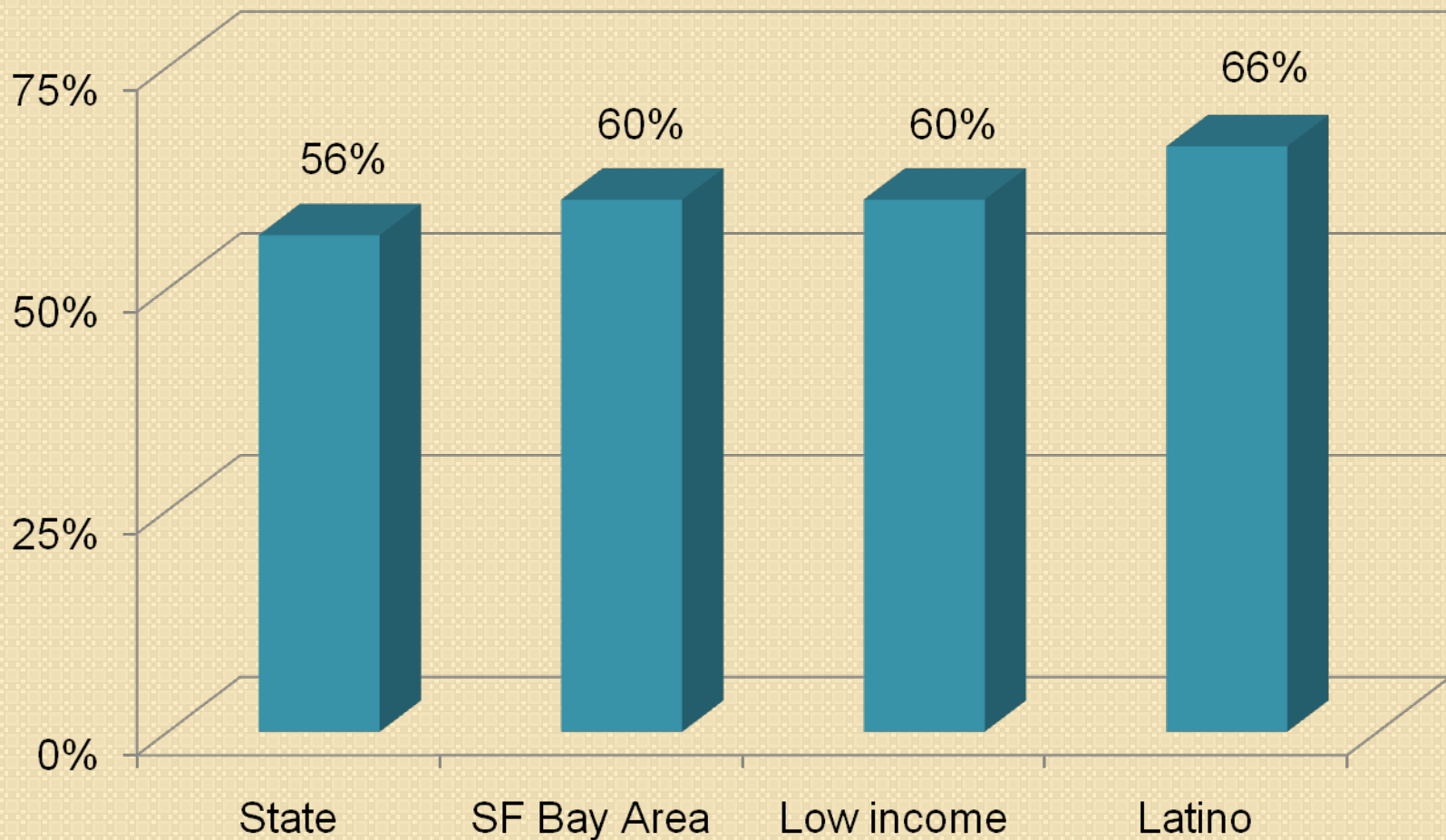




SB1210 & AB2100

Legislation would tax sugar-sweetened beverages at a rate of one penny per teaspoon of added sugar to fund childhood obesity prevention programs.

MAJORITY OF CALIFORNIANS SUPPORT SODA TAX TO FUND OBESITY PREVENTION



(Source: CA Center for Public Health Advocacy, 2010)



2 Liter Soda

(54-62 tsp of sugar; \$0.60-\$1.50)

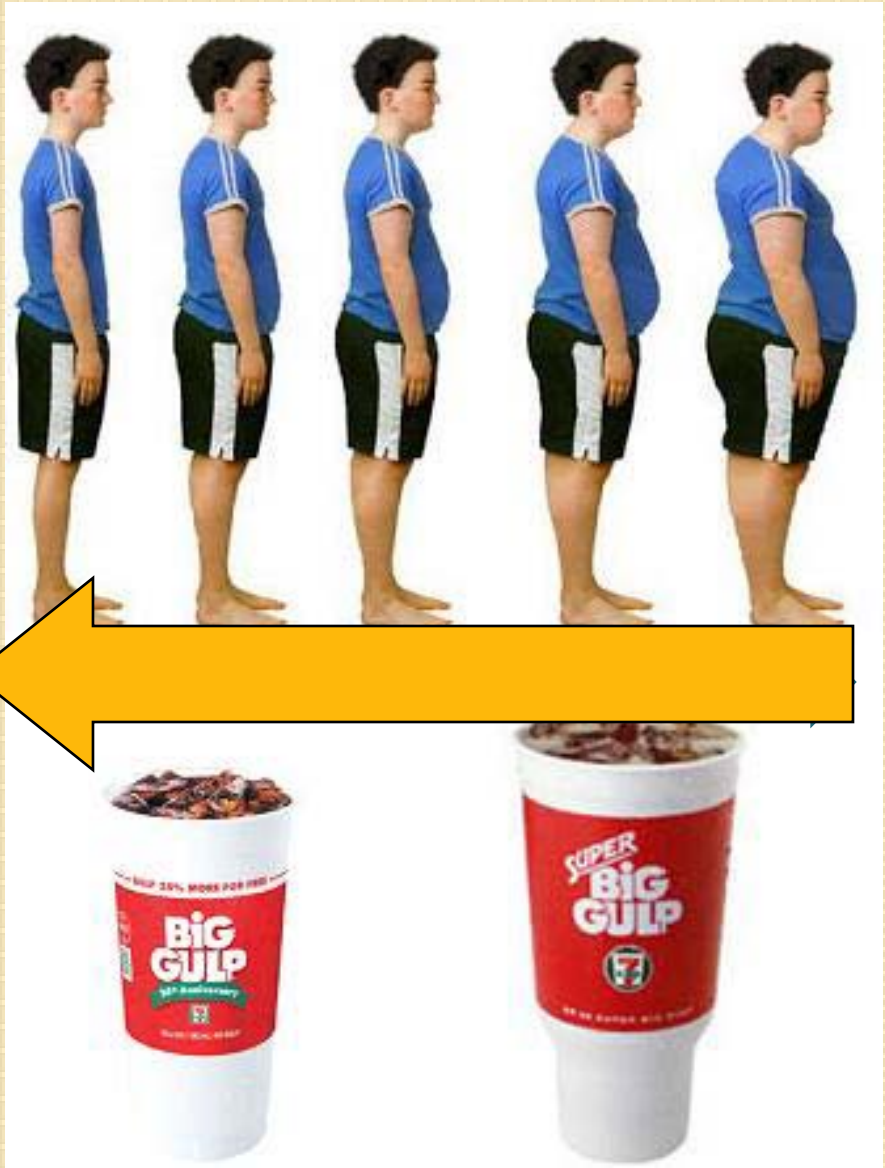
Study shows that small taxes on soda (4%) don't impact consumption or obesity

Proposed tax would increase cost of soda by >50%

(Source: Sturm, 2010)

Other Sweetened Beverages





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