

# The Public Health and Economic Benefits of Taxing SSBs

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Yale University



**RUDD CENTER**

FOR FOOD POLICY  
& OBESITY

# Today

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- Rudd Center
- Why target SSBs?
  - public health benefits
  - economic benefits
- Taxes as part of broader public health strategy
  - Other strategies to reduce consumption
- What to expect from industry



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## FOR FOOD POLICY & OBESITY



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- Food marketing to kids
- School and pre-school initiatives
- Weight bias
- Legal and economic approaches
- Food and addiction
- Policy resources



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**What We Do**

- Economics
- Food & Addiction

Home > What We Do > Public Policy > Current Initiatives : Sugar-Sweetened Beverages/Taxes

## Sugar-Sweetened Beverages/Taxes

**Sugar-sweetened beverages** (SSBs) are drinks sweetened with

**Resources**

Policy Resources



# Evaluating Sugary Drink Nutrition and Marketing to Youth

[www.sugarydrinkfacts.org](http://www.sugarydrinkfacts.org)

[www.yaleruddcenter.org/press/image\\_gallery.aspx](http://www.yaleruddcenter.org/press/image_gallery.aspx)



Definition: Any beverage with  
added caloric sweetener





# SSB Tax Proposal

- Penny per ounce
  - Any beverage w. added sugar
- or
- Penny per teaspoon added sugar
  - Incentive to reduce sugar
- Revenue for obesity prevention



# Impact of price changes

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- 10% price increase = 10-12.6% consumption decrease
- Penny per oz = approx 20% increase
- Enough to reduce net caloric intake and obesity

# Also looking for

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- Decreased diabetes incidence
- Reduced obesity-related health care costs

Estimated percentage reduction in U.S. total consumption, 2010.

Source: Authors' calculations.

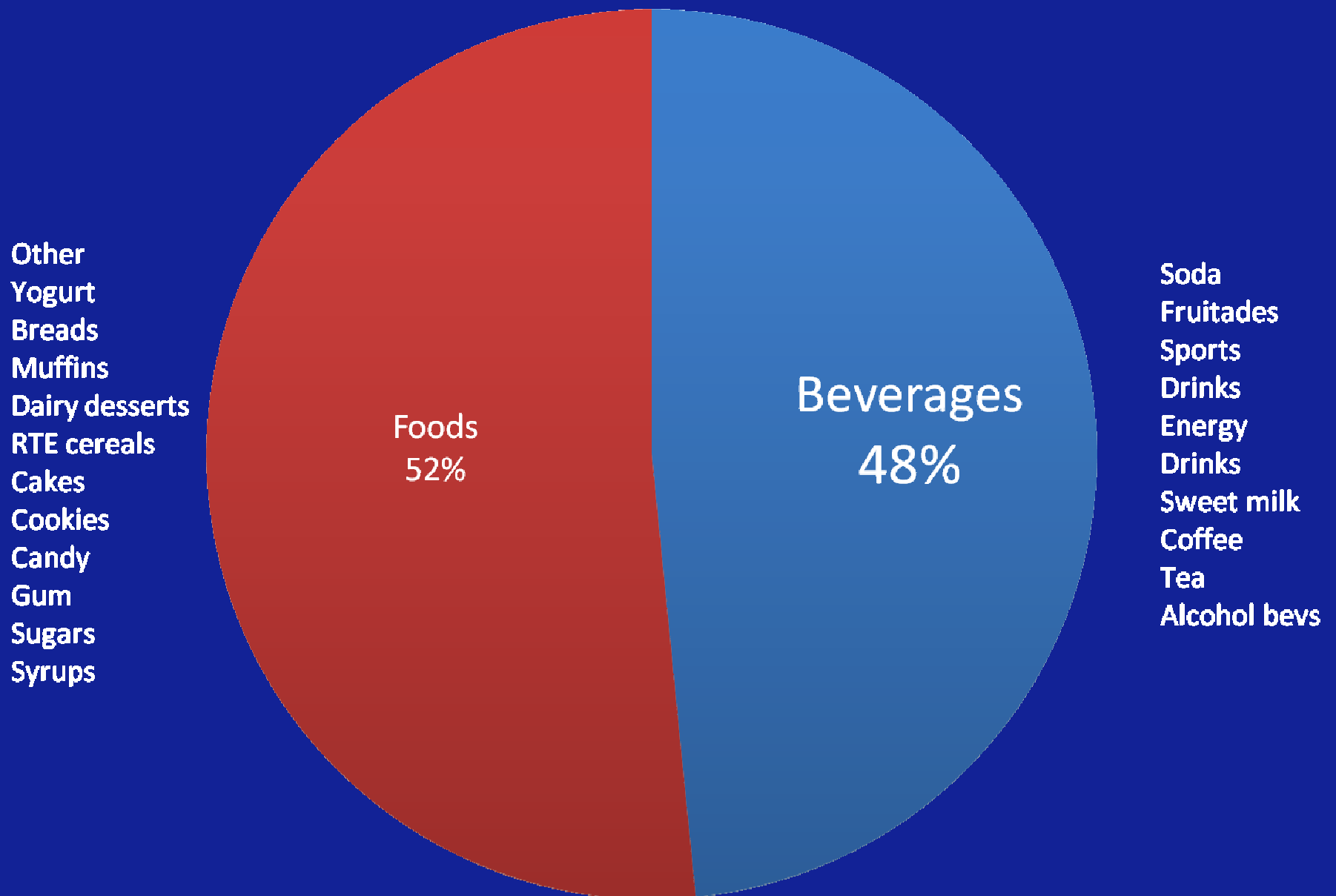
Beverage	Tax of beverage (¢1/oz)	
	SSBs taxed, %	SSBs and diet varieties taxed, %
CSDs, regular varieties	26.7	17.8
CSDs, diet varieties	0	17.8
Fruit drinks, excluding 100% fruit juice	17.1	11.4
Sports drinks	24.0	16.0
RTD teas, regular varieties	13.3	8.9
RTD teas, diet varieties	0	8.9
Flavored/enhanced water	21.8	14.6
Energy drinks	6.9	4.6
RTD coffees	6.0	4.0
Total	24.0	16.3

# A Penny-Per-Ounce Tax On Sugar-Sweetened Beverages Would Cut Health And Cost Burdens Of Diabetes

**ABSTRACT** Sugar-sweetened beverages are a major contributor to the US obesity and diabetes burden. Using the Behavioral Risk Factor Surveillance System (BRFSS) Disease Policy Model, we examined the impact of a nationwide tax on sugar-sweetened beverages. We found that the tax would reduce consumption by 15 percent among adults ages 25-64. This reduction was estimated to prevent 2.4 million events, 8,000 deaths, and avoid more than \$17 billion in health care costs. Generating approximately \$13 billion in annual tax revenue, a modest tax on sugar-sweetened beverages could reduce the adverse health and cost burdens of obesity, diabetes, and cardiovascular diseases.

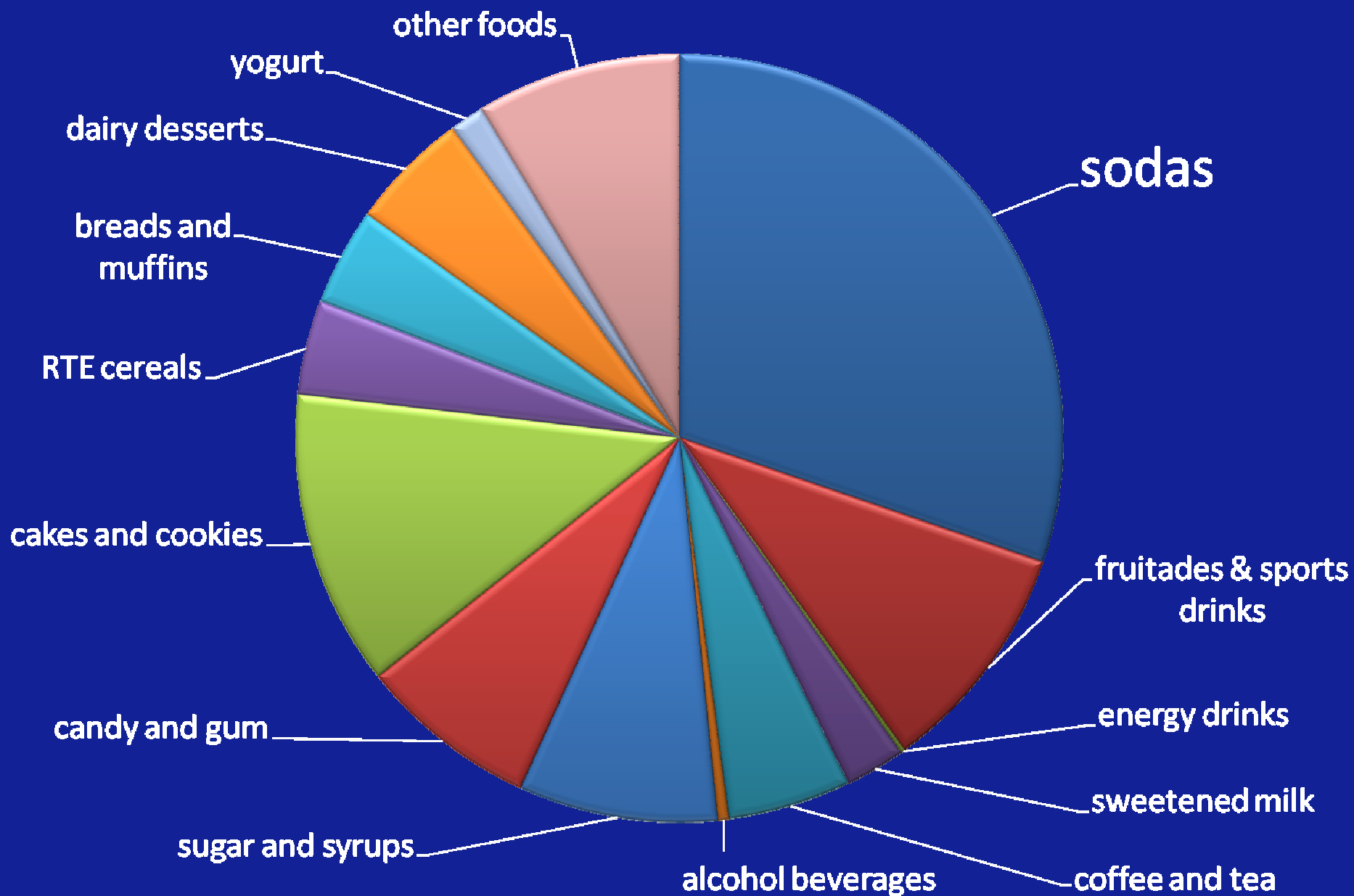
Why target SSBs?  
Largest source added sugar

## Sources of added sugars, 2-19 yr, NHANES 2007-08





## Sources of added sugars, 2-19 yr, NHANES 2007-08



Why target SSBs?  
Science is strong and growing

HEALTH POLICY REPORT

**The Public Health and Economic Benefits  
of Taxing Sugar-Sweetened Beverages**

Kelly D. Brownell, Ph.D., Thomas Farley, M.D., M.P.H., Walter C. Willett, M.D., Dr.P.H.,  
Barry M. Popkin, Ph.D., Frank J. Chaloupka, Ph.D., Joseph W. Thompson, M.D., M.P.H.,  
and David S. Ludwig, M.D., Ph.D.

Since then, more studies...

# Child/adult overweight & obesity

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- Committee on Nutrition, Council on Sports Med and Fitness, Pediatrics, 2011
- Fiorito et al., Am J Clin Nutr, 2009
- Lim et al., Obesity, 2009
- Sichieri et al., Pub Health Nutr, 2009
- Woodward-Lopez et al., *Pub Health Nutr*, 2011
- Hu et al., *Physiol Behav*, 2010

# Elevated risk of type 2 Diabetes

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- deKoning, AJCN, 2012
- Malik et al., Circulation, 2010
- Malik et al., Diabetes Care, 2010

# Prospective Study of Pre-Gravid Sugar-Sweetened Beverage Consumption and the Risk of Gestational Diabetes Mellitus

LIWEI CHEN, MD, PHD<sup>1</sup>  
FRANK B. HU, MD, PHD<sup>2,3,4</sup>  
EDWINA YEUNG, PHD<sup>5</sup>

WALTER WILLETT, MD, DRPH<sup>2,3,4</sup>  
CUILIN ZHANG, MD, PHD<sup>5</sup>

**OBJECTIVE** — Consumption of sugar-sweetened beverages (SSBs) was related to an elevated risk of type 2 diabetes and insulin resistance in several recent studies among middle- or older-aged populations. Studies on SSB consumption and glucose intolerance among pregnant women, however, are lacking. We therefore examined the association between regular SSB consumption before pregnancy and the risk of gestational diabetes mellitus (GDM).

**RESEARCH DESIGN AND METHODS** — This was a prospective study among 13,475 U.S. women who reported at least one singleton pregnancy between 1992 and 2001 in the Nurses' Health Study II. GDM was self-reported and validated by medical record review in a subsample. Cox proportional hazards models with multivariate adjustments were applied to examine the association of SSB consumption with GDM risk.

**RESULTS** — During 10 years of follow-up, 860 incident GDM case subjects were identified. After adjustment for age, parity, race, physical activity, smoking, alcohol intake, prepregnancy BMI, and Western dietary pattern, intake of sugar-sweetened cola was positively associated with the risk of GDM, whereas no significant association was found for other SSBs and diet beverages. Compared with women who consumed <1 serving/month, those who consumed  $\geq 5$  servings/week of sugar-sweetened cola had a 22% greater GDM risk (relative risk 1.22 [95% CI 1.01–1.47]).

**CONCLUSIONS** — Findings from this study suggest that prepregnancy higher consumption of sugar-sweetened cola ( $\geq 5$  servings/week) is associated with an elevated GDM risk, whereas no significant association with GDM risk was observed for other SSBs and diet beverages.

Americans' diets (2). In animal models and human studies, a high-sugar diet reduces insulin sensitivity (3,4) and insulin secretion (5). Higher consumption of SSBs was associated with an elevated risk of type 2 diabetes (6–8) and insulin resistance (9) among middle- or older-aged adults in several recent epidemiological studies. Studies regarding the impact of habitual SSB consumption on glucose intolerance among pregnant women, however, are lacking. We therefore examined the association of pregravid SSB consumption with GDM risk in a large prospective cohort of U.S. women.

**RESEARCH DESIGN AND METHODS** — The Nurses' Health Study II (NHS II) is a prospective cohort study of 116,671 female U.S. nurses, originally recruited at age 24–44 years in 1989. This cohort has been, and continues to be, followed with the use of biennial mailed questionnaires to update information on health-related behavior and to determine incident disease outcome. The follow-up rate has been  $\sim 90\%$  for every 2-year period. In the present analysis, women were excluded if they did not complete a semi-

# CVD in adolescents and adults

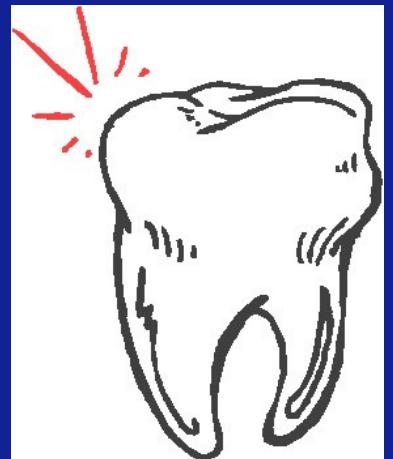
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- Pollock et al., J Nutr, 2012)
- Bernstein et al., AJCN, 2012
- deKoning et al., Circ., 2012
- Aeberli et al., AJCN, 2011
- Brown et al., Hypertension, 2011
- Duffey et al., AJCN, 2010
- Welsh et al., JAMA, 2010
- Fung et al., AJCN, 2009

# Dental caries, erosion

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- Committee on Nutrition, Council on Sports Med and Fitness, Pediatrics, 2011)
- Buyer, J IN Dental Assn, 2009
- Warren et al, Commty Dent. Oral, 2009





# NO association: Industry-funded

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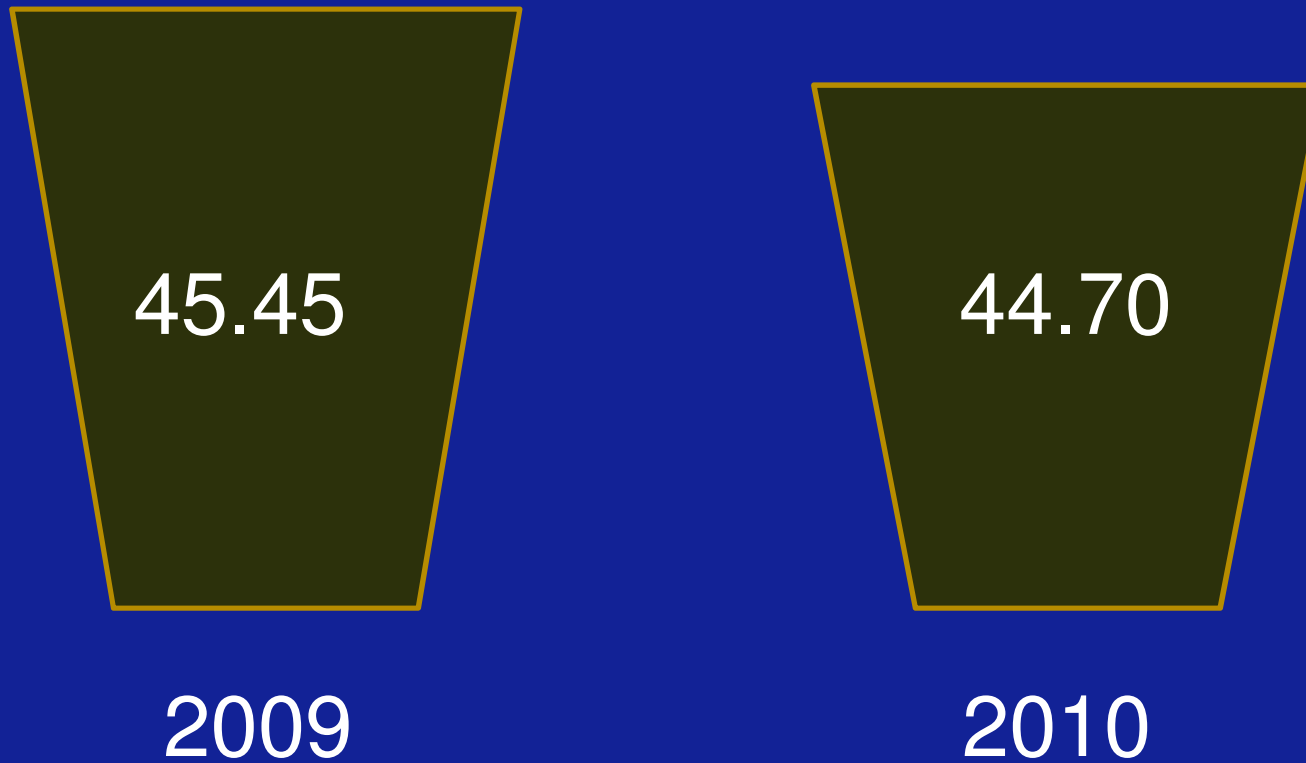
## Meta-analyses

- Vartanian et al. AJP, 2007
- Lesser et al., PLoS Med, 2007

Industry funding increased the likelihood of a finding favorable to the sponsor by 4- to 8-fold.

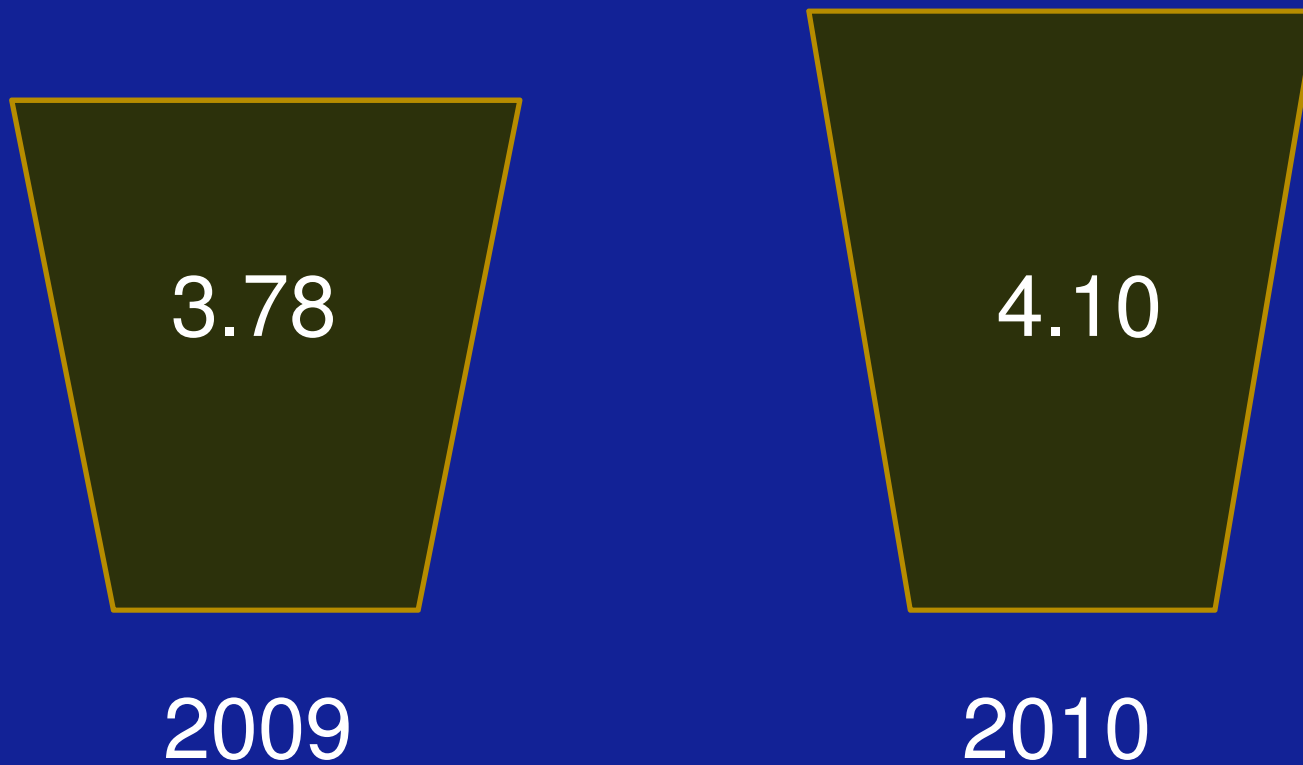
# Why target SSBs? Consumption trends

# Soda down slightly



Gallons/year per capita

# Sports drinks up



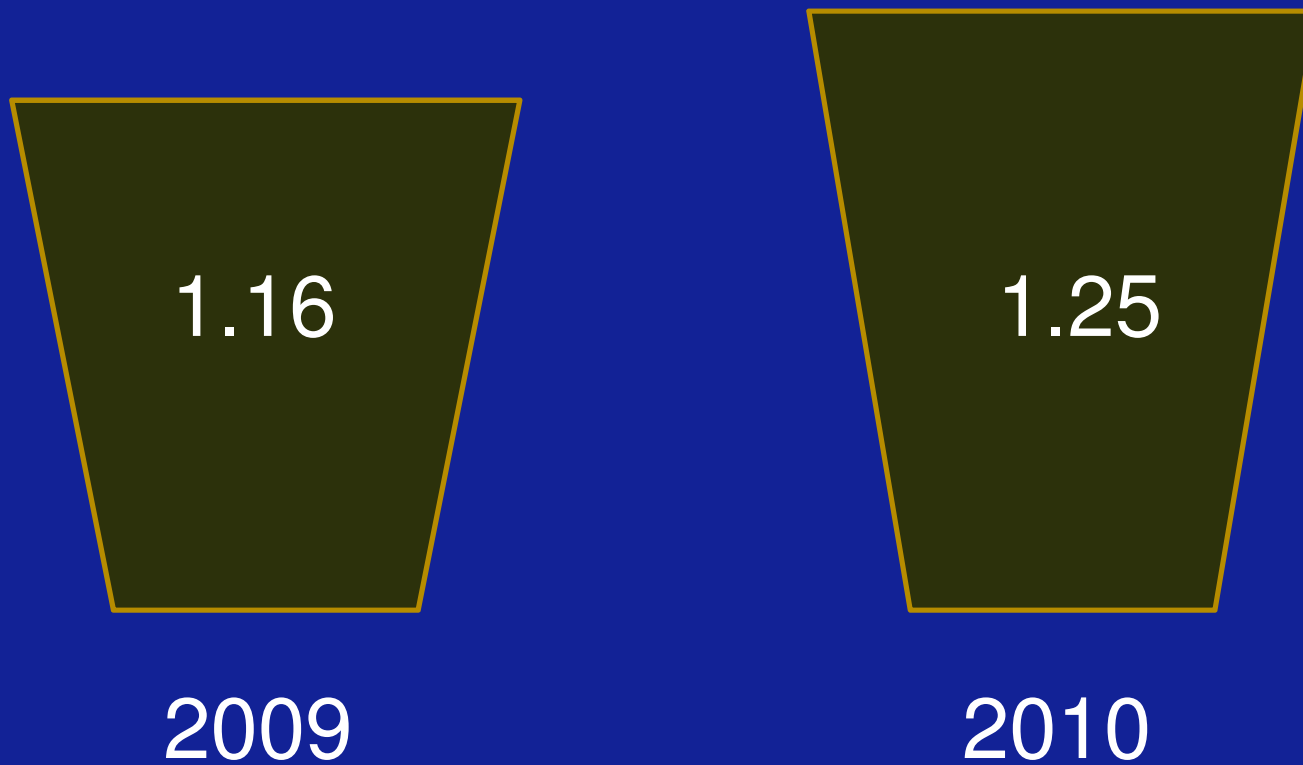
Gallons/year per capita

# RTD teas up



Gallons/year per capita

# Energy drinks up



Gallons/year per capita

Why target: Intake

Average US intake = 45 gallons/yr

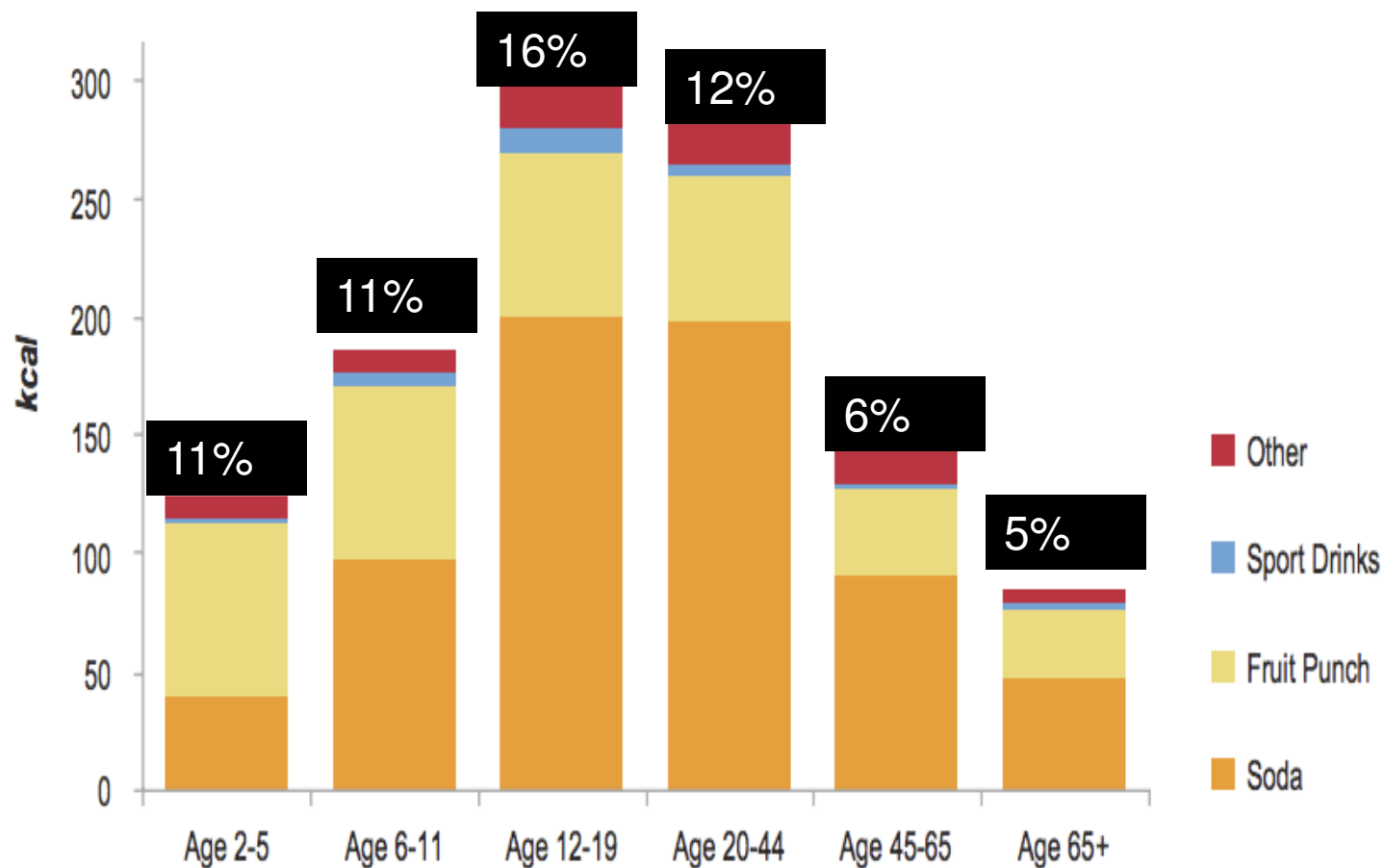
Andreyeva, et al., Prev. Med, 2011



*Figure 6*

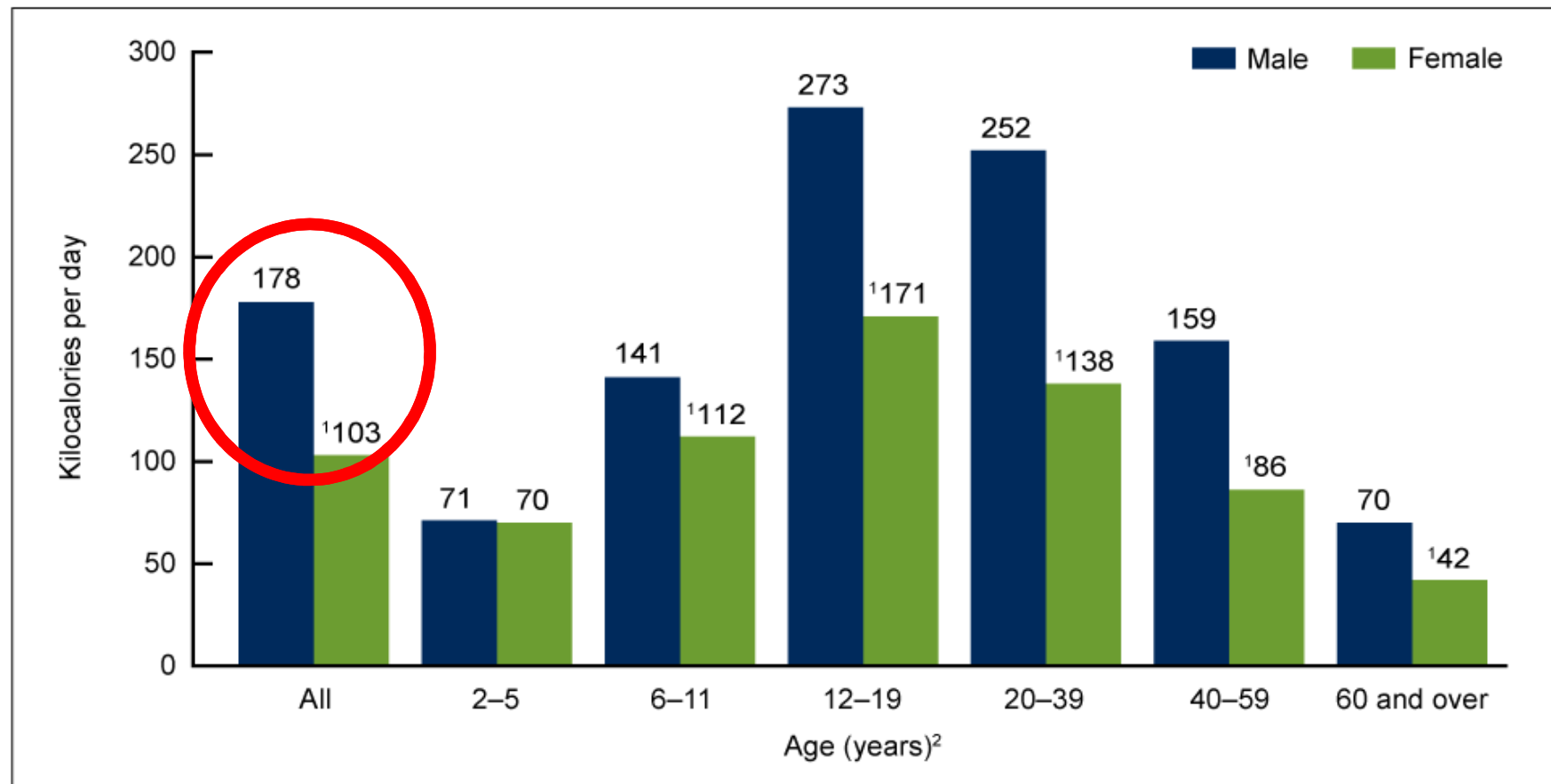
**Per Capita Daily Consumption of Calories from SSBs, by Type, 1999-2004**

*Source: Adapted from Wang, et al. (2008) and Bleich, et al., (2009).*



# Daily Calories

Figure 1. Mean kilocalories from sugar drinks for ages 2 and over: United States, 2005–2008



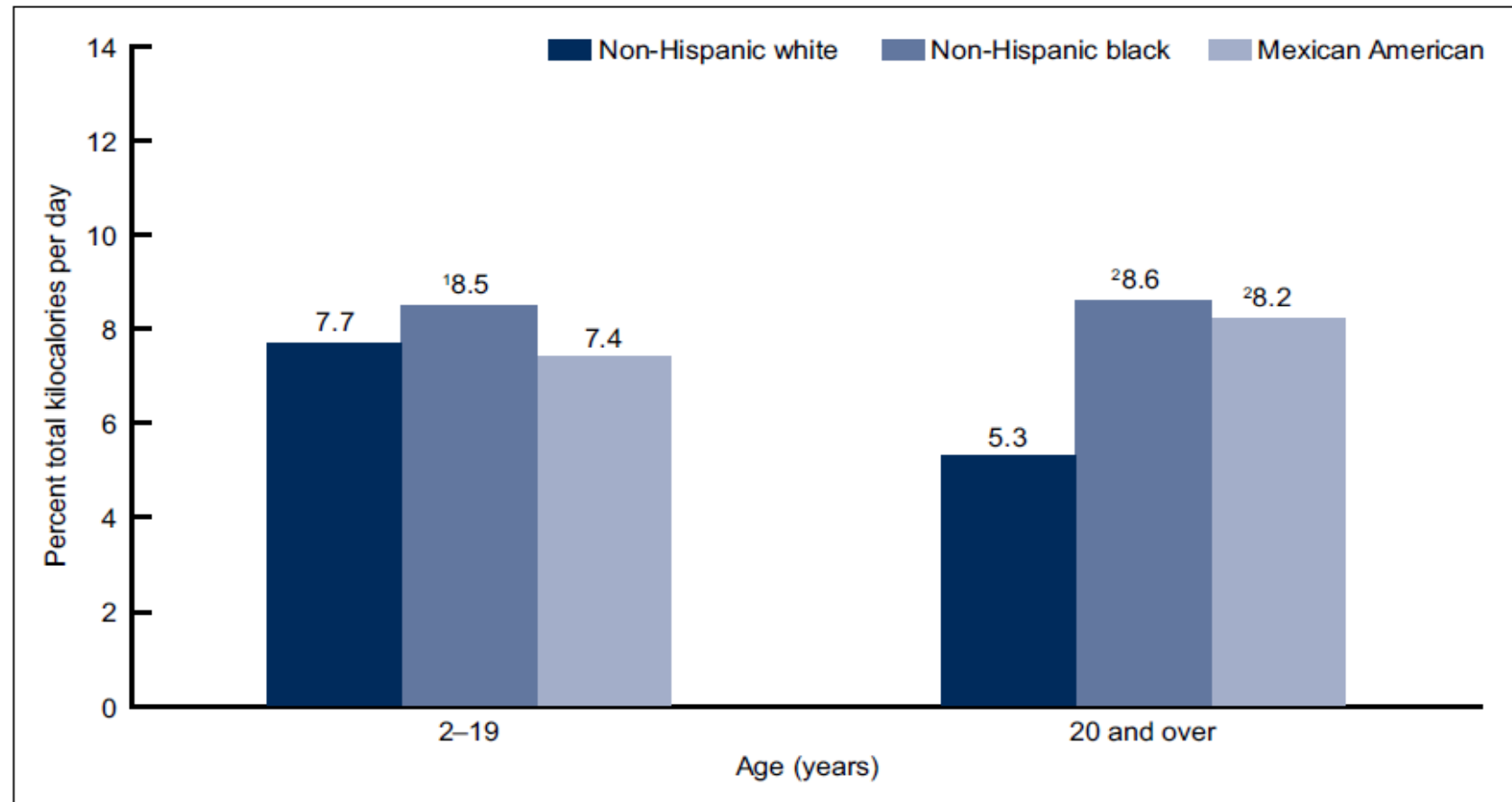
<sup>1</sup>Significantly different from males.

<sup>2</sup>Significant quadratic trend for both males and females.

SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey, 2005–2008.

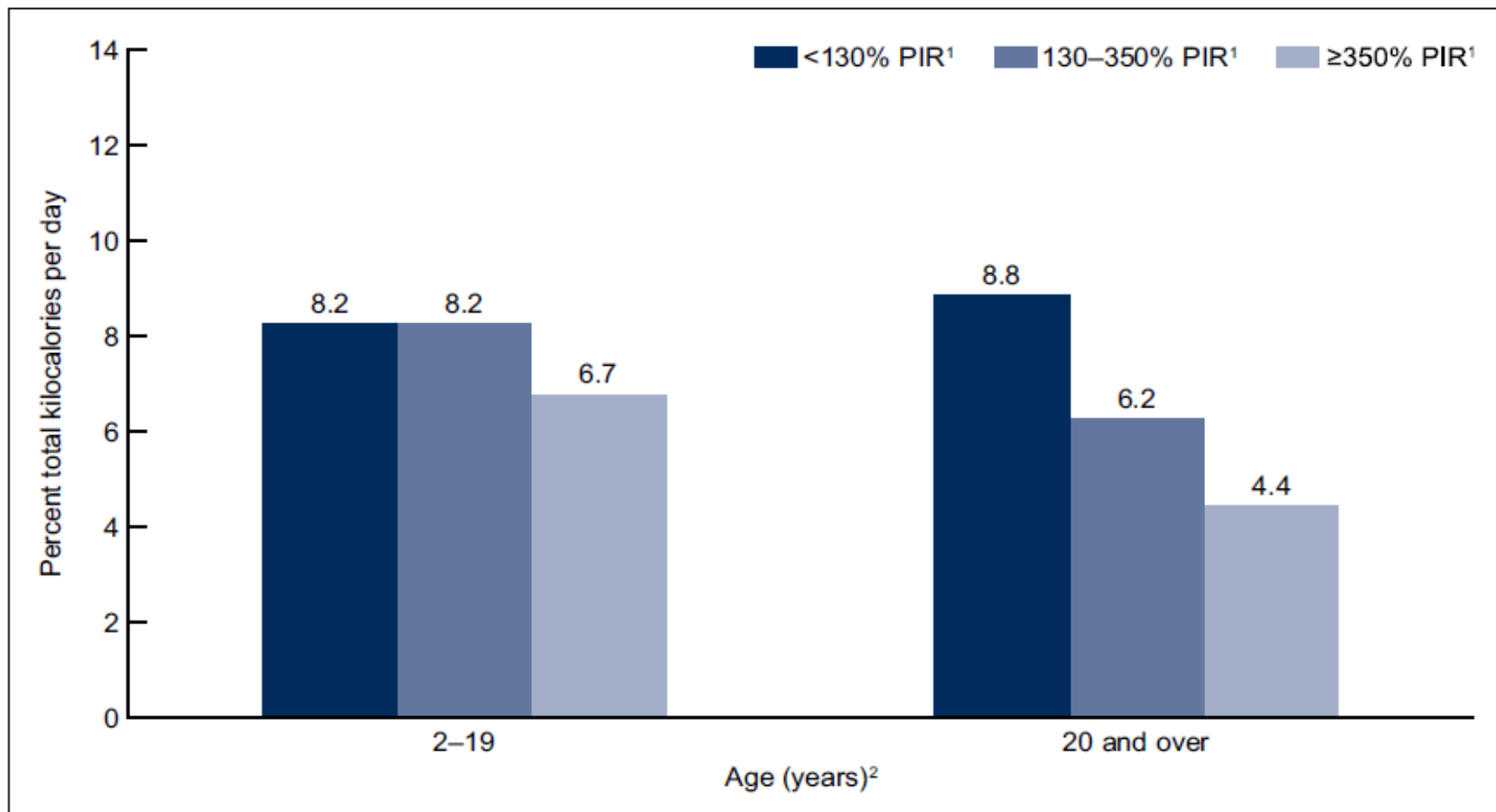
# By Race/Ethnicity

Figure 4. Mean percentage of total daily kilocalories from sugar drinks for ages 2 and over, by race and ethnicity: United States, 2005–2008



# By Income

Figure 5. Mean percentage of total daily kilocalories from sugar drinks for ages 2 and over, by poverty income ratio: United States, 2005–2008

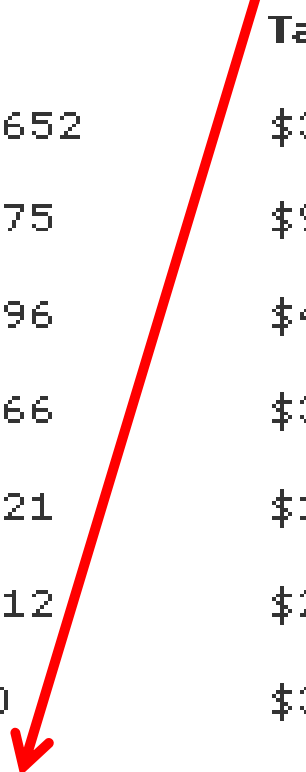


# The calories are...

- empty
  - junk
  - detrimental
  - nutrition-less
- 
- whatever (bad thing) you want to call them....

# Maine is drinking...

Drink Type	Gallons	Tax Revenues
Regular Soft Drinks	25,519,652	\$32,665,155
Fruit Beverages	7,670,475	\$9,818,208
Sports Drinks	3,786,096	\$4,846,203
Ready-to-Drink Tea - Nondiet	3,059,866	\$3,916,628
Flavored Water	1,493,721	\$1,911,963
Energy Drinks	1,577,312	\$2,018,959
Ready-to-Drink Coffee	245,500	\$314,240
<b>Total sugar-sweetened beverages</b>	<b>43,352,622</b>	<b>\$55,491,356</b>



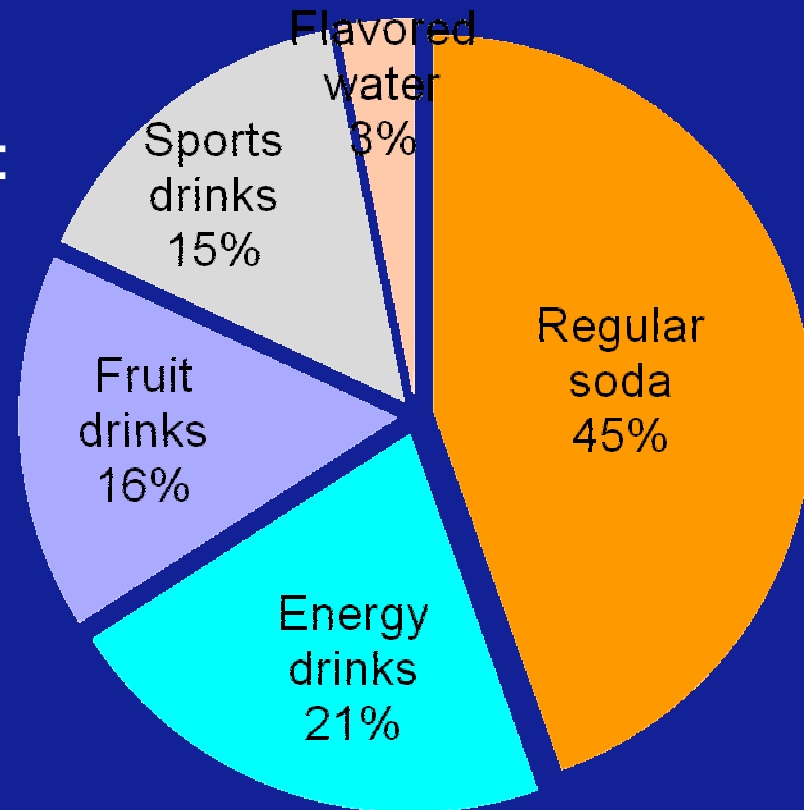
# Why target SSBs: Marketing to Kids

# Sugary Drink FACTS

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- 644 products, 61 brands, 14 companies
- \$29 billion estimated sales

Share of sales in 2010:



Source: Symphony IRI





# Evaluating Sugary Drink Nutrition and Marketing to Youth

[www.sugarydrinkfacts.org](http://www.sugarydrinkfacts.org)

Higher exposure significantly associated  
with higher consumption

# Voluntary policies not working

- CFBAI
  - Began 2006
  - 17 companies
  - No ads to kids under 12



# Industry fighting *voluntary* stds

## Sensible Food Policy Coalition

ENSURING CHOICES IN NUTRITION FOR AMERICA'S FAMILIES

FOODS IMPACTED BY THE PROPOSAL

WHAT WE'RE DOING

LEARN MORE ▾

MEDIA SPOTLIGHT

CONTACT

### Keep the Government Out of Your Kitchen!

New restrictions proposed by the federal government will limit the information parents have to make decisions about foods our children eat. Lawmakers and bureaucrats will decide what's best for you and your family.

**Tell the FTC**



# Coke's CEO

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“We are laser-focused on targeting the right consumers ....To target aging and affluent consumers globally, we are actively exploring new ingredients, new functionality and new occasions. **At the same time, we are creating new strategies that are winning over a massive new generation of teens to drive growth of Trademark Coca-Cola.**”

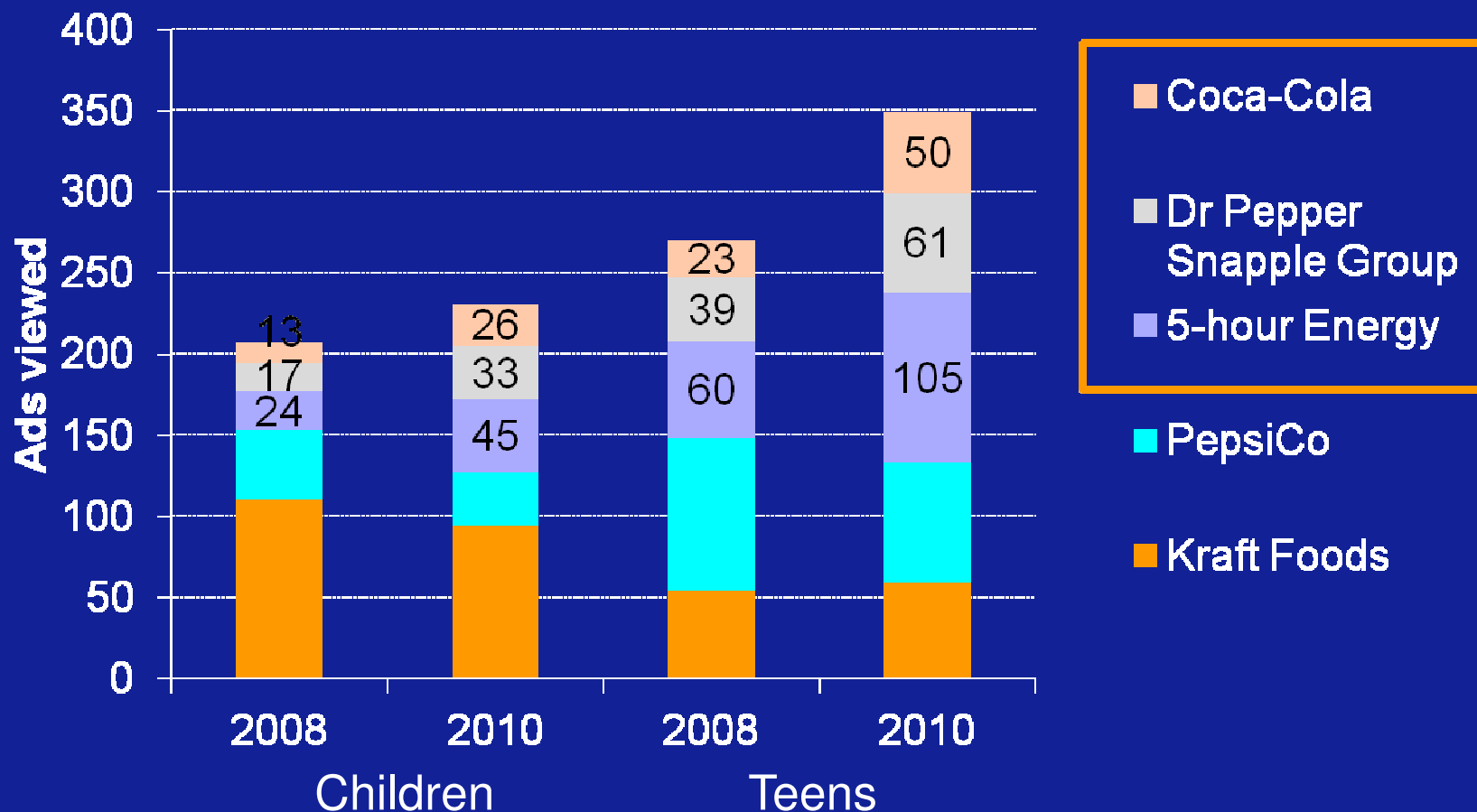
# Targeting Youth

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- Especially Black and Hispanic
- Despite pledges to market fewer SSBs, industry is targeting youth with more

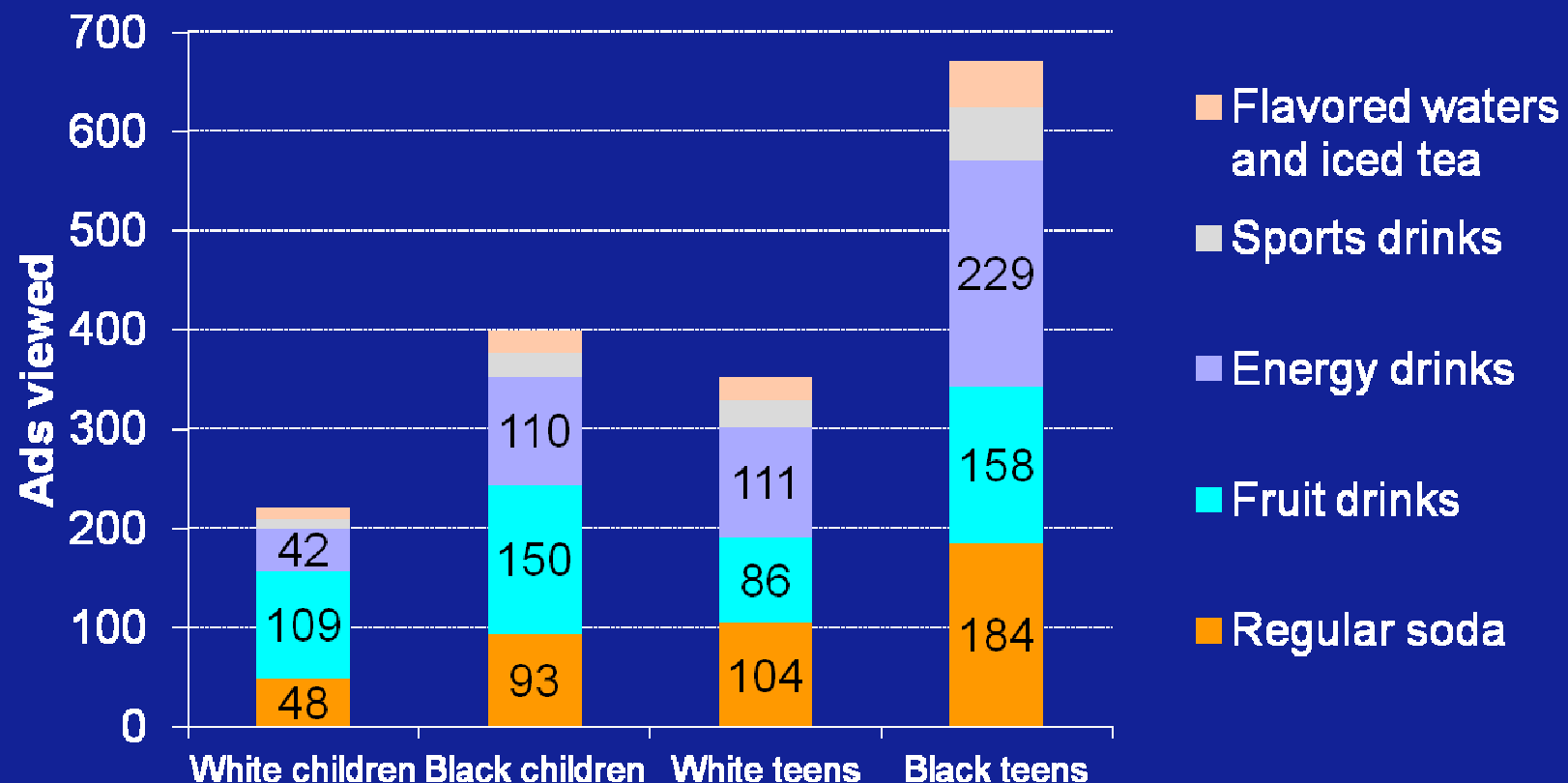
# TV ads increased overall

3 companies doubled advertising



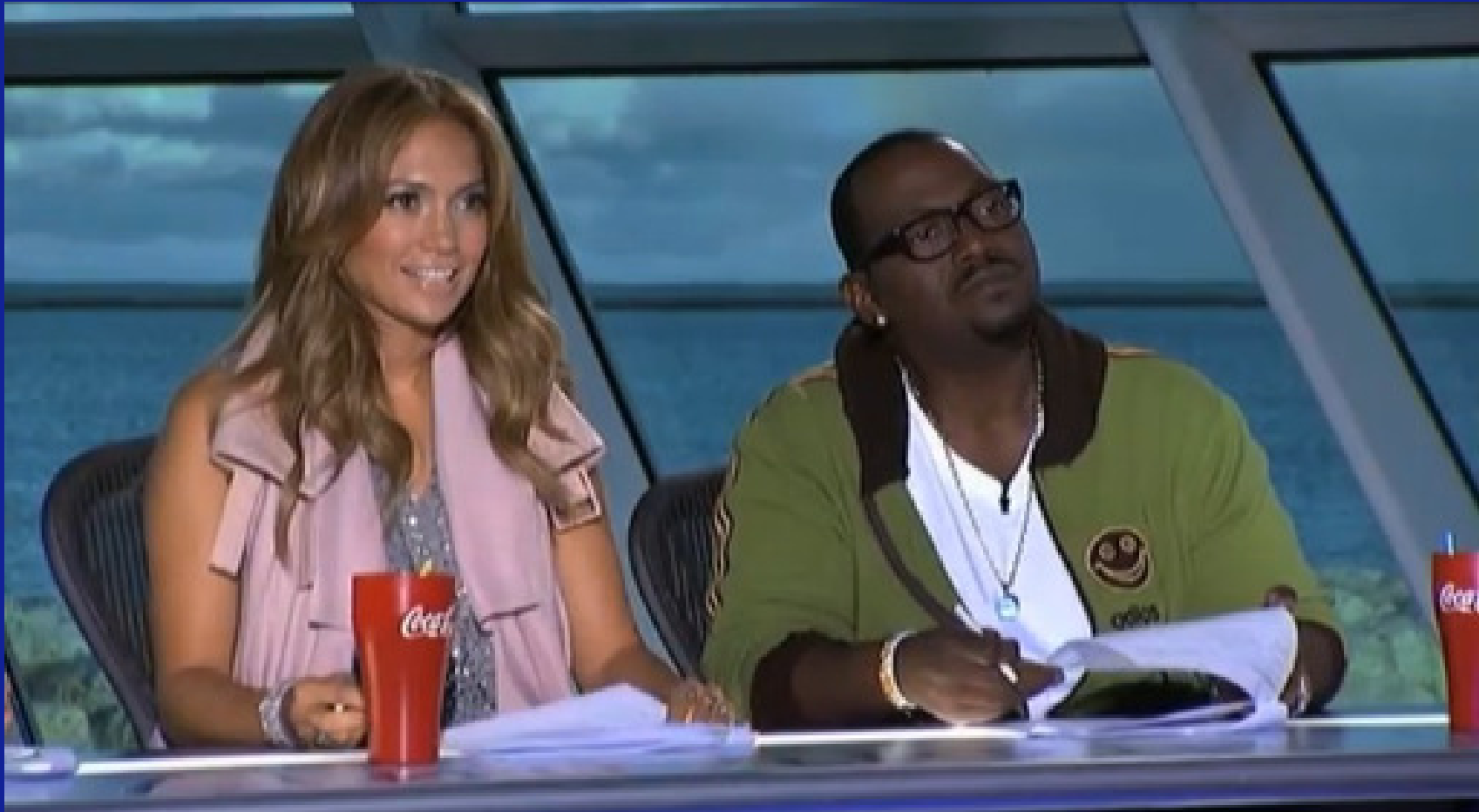
# Black children/teens view 80-90% more TV ads than whites

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# Product placements



# YouTube

- Coke: 23 million upload views
- Red Bull: 158 million
- Monster: 11 million



# Facebook

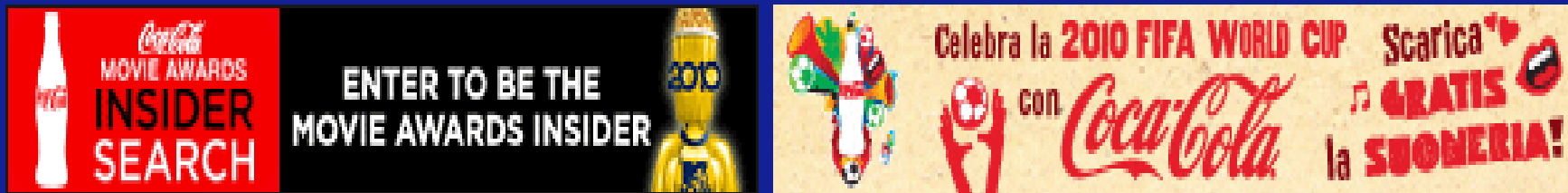
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- 30 million fans, #1 brand on Facebook



# Mobile advertising

- Banner ads



- Text messages

From My Coke Rewards, 3/4/11:

Want to boost ur balance? It's easy to do. Enter 3 codes in the next 10 days and u'll get 20 Bonus Points on us.

# Mobile apps

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- Downloaded by 40,000 teens (25-40% of users)

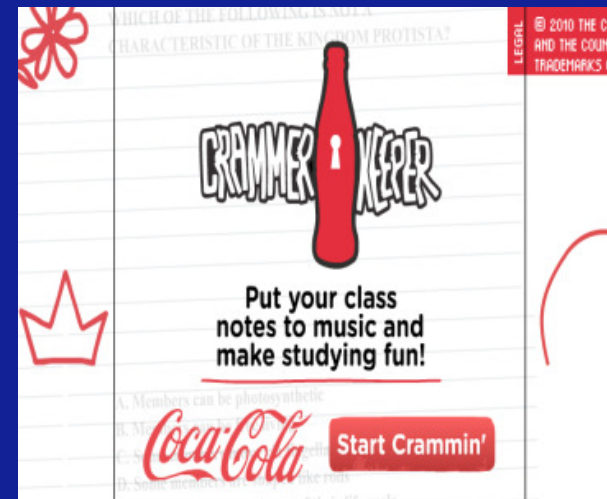
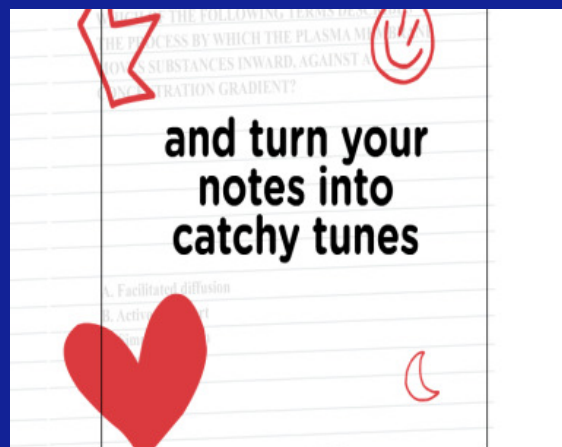
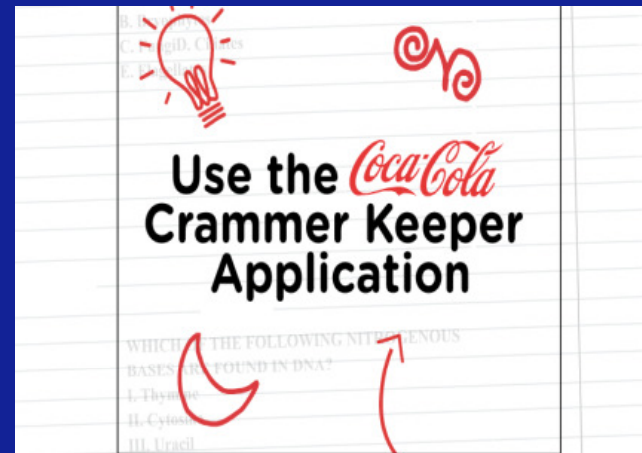
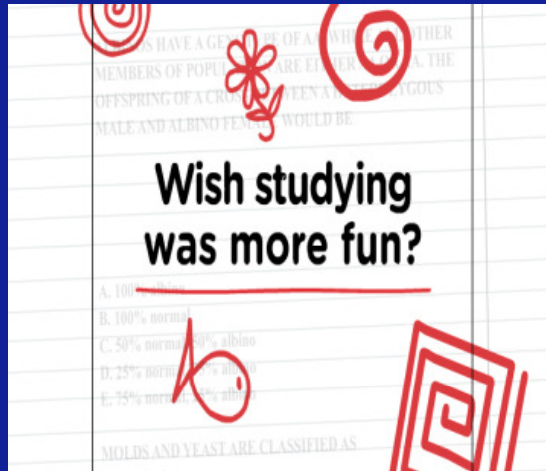


# Company websites

	Visitors per month		
	2-11 years	12-17 years	Minutes per month
MyCokeRewards.com	42,000	128,900	9.2
Coca-Cola.com	3,800	32,600	1.6
MyCoke.com	6,200	28,400	1.8

The screenshot shows the MyCokeRewards website. At the top, there's a navigation bar with the MyCokeRewards logo, a Hotwire banner for rental cars, and a sign-in/register section. Below this is a main banner for 'Coca-Cola Family Night' featuring a family playing video games and three buttons: 'GAME TOGETHER', 'PLAY TOGETHER', and 'SNACK TOGETHER'.

# Banner ads on 3rd-party websites



# Twitter

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- 300,000 followers

@CocaCola

10/19/10: Smiles, laughs, bubbles. What else do you associate with Coca-Cola? ^OP



Even Barbie



# Why target SSBs: Caffeine

# Gratuitous addition of caffeine

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- Coupled with calories
- *Supposed* taste enhancer
- AAP: “Rigorous review and analysis of the literature reveal that caffeine and other stimulant substances contained in energy drinks have no place in the diet of children and adolescents.”

Economic benefits

Year: 2013

State: ME

--or-- City: --Select--

Tax Per Ounce: 1 cent(s) (0.01 - 2.00 cents)

☒ Sugar-Sweetened Beverages ☐ Sugar-Sweetened and Diet Beverages

Calculate

Drink Type	Gallons	Tax Revenues
Regular Soft Drinks	25,284,640	\$32,364,339
Fruit Beverages	7,443,479	\$9,527,653
Sports Drinks	3,763,009	\$4,816,652
Ready-to-Drink Tea - Nondiet	3,220,321	\$4,122,011
Flavored Water	1,466,857	\$1,877,577
Energy Drinks	1,620,433	\$2,074,154
Ready-to-Drink Coffee	257,269	\$329,304
<b>Total sugar-sweetened beverages</b>	<b>43,056,008</b>	<b>\$55,111,690</b>

# Study: Obesity adds \$190b in health costs

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- “The startling economic costs of obesity, often borne by the non-obese, could become the epidemic’s second-hand smoke.”

## Estimated adult obesity-attributable percentages and medical expenditures for Maine (2003 dollars)

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Total population:	5.6%	\$357m
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Medicare pop:	5.7%	\$66m
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Medicaid pop:	10.7%	\$137m
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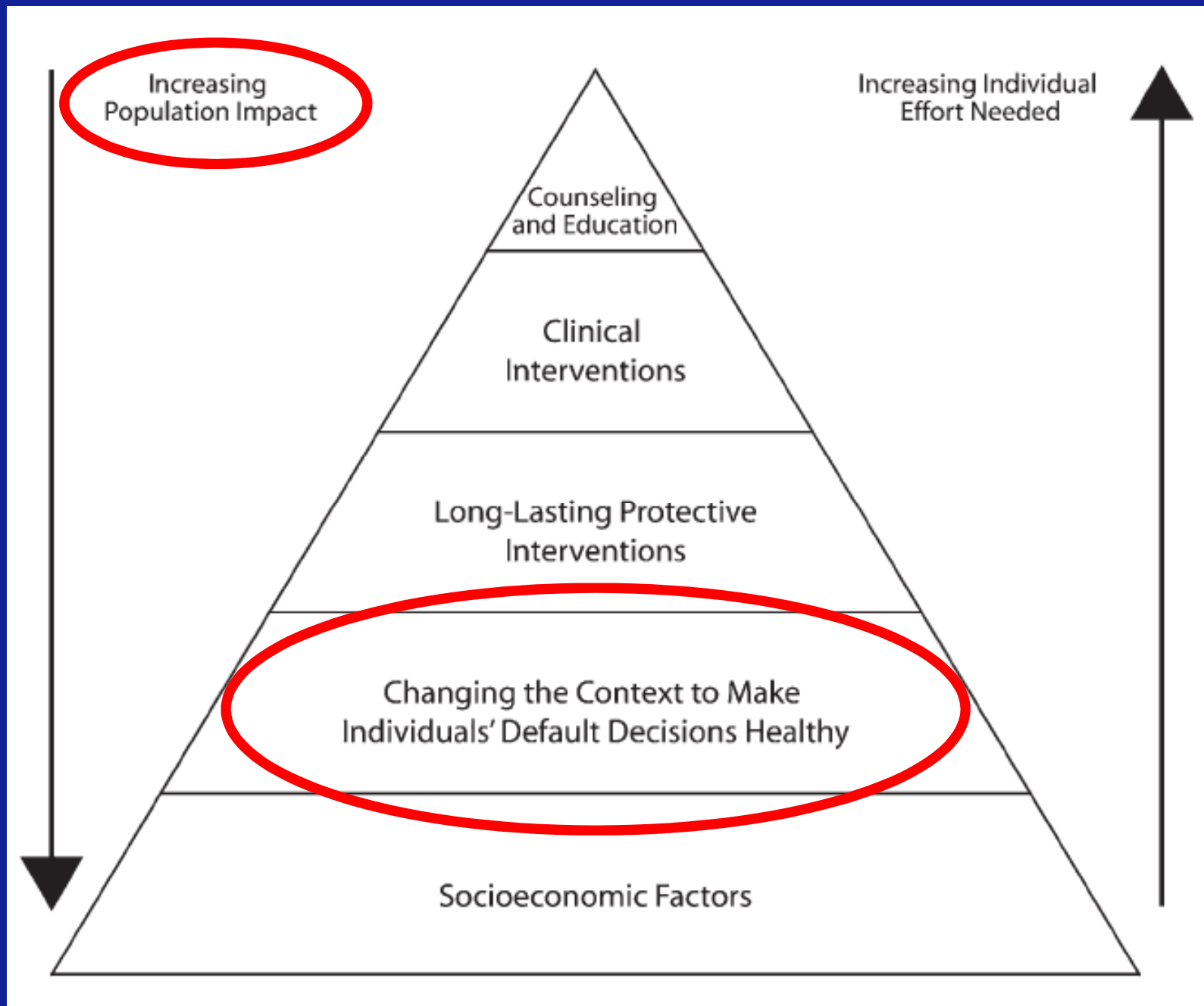
# Earmarking

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- School-based interventions
- Access to real food/subsidize real food
- Public education campaigns
- Community interventions
- Health care

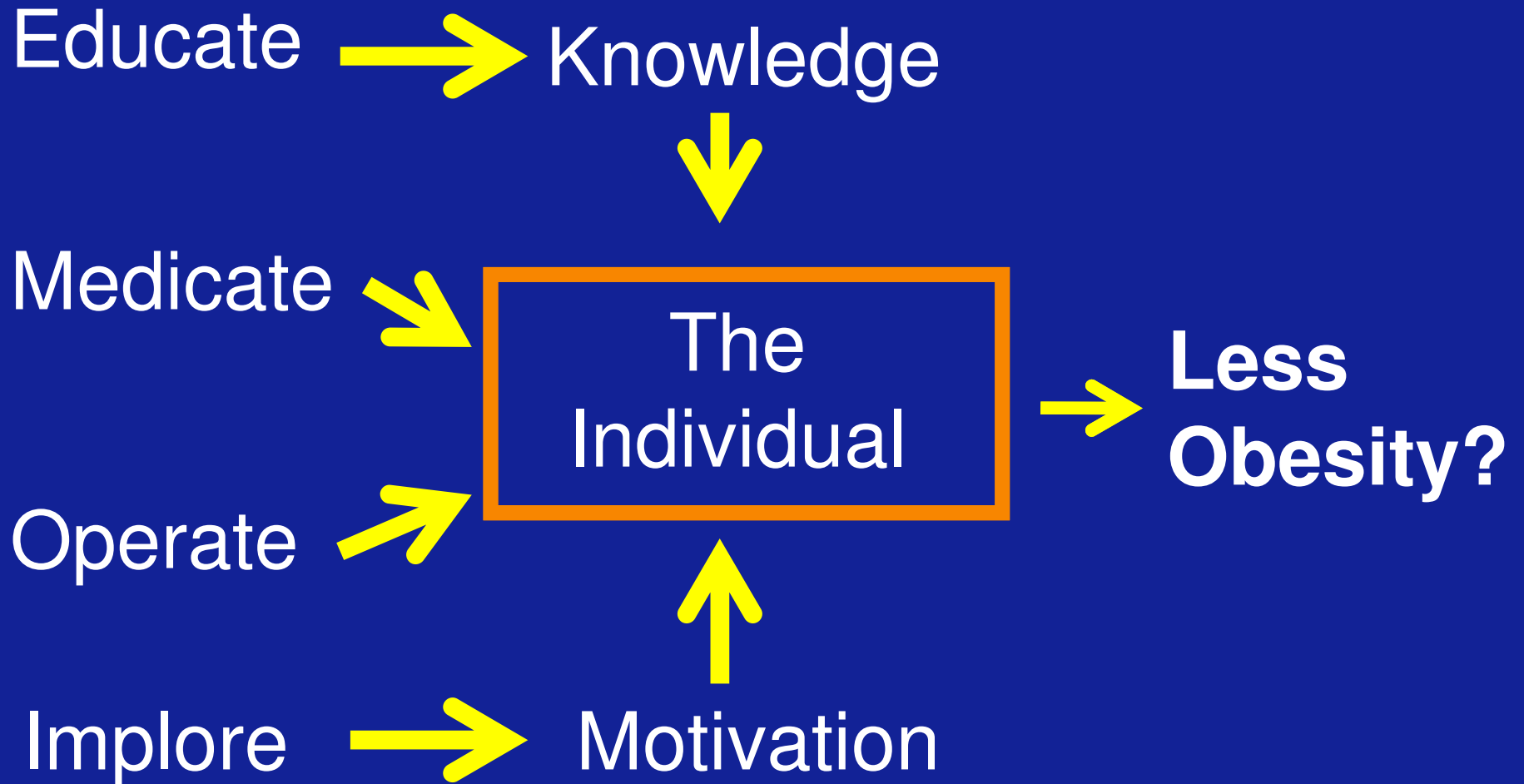


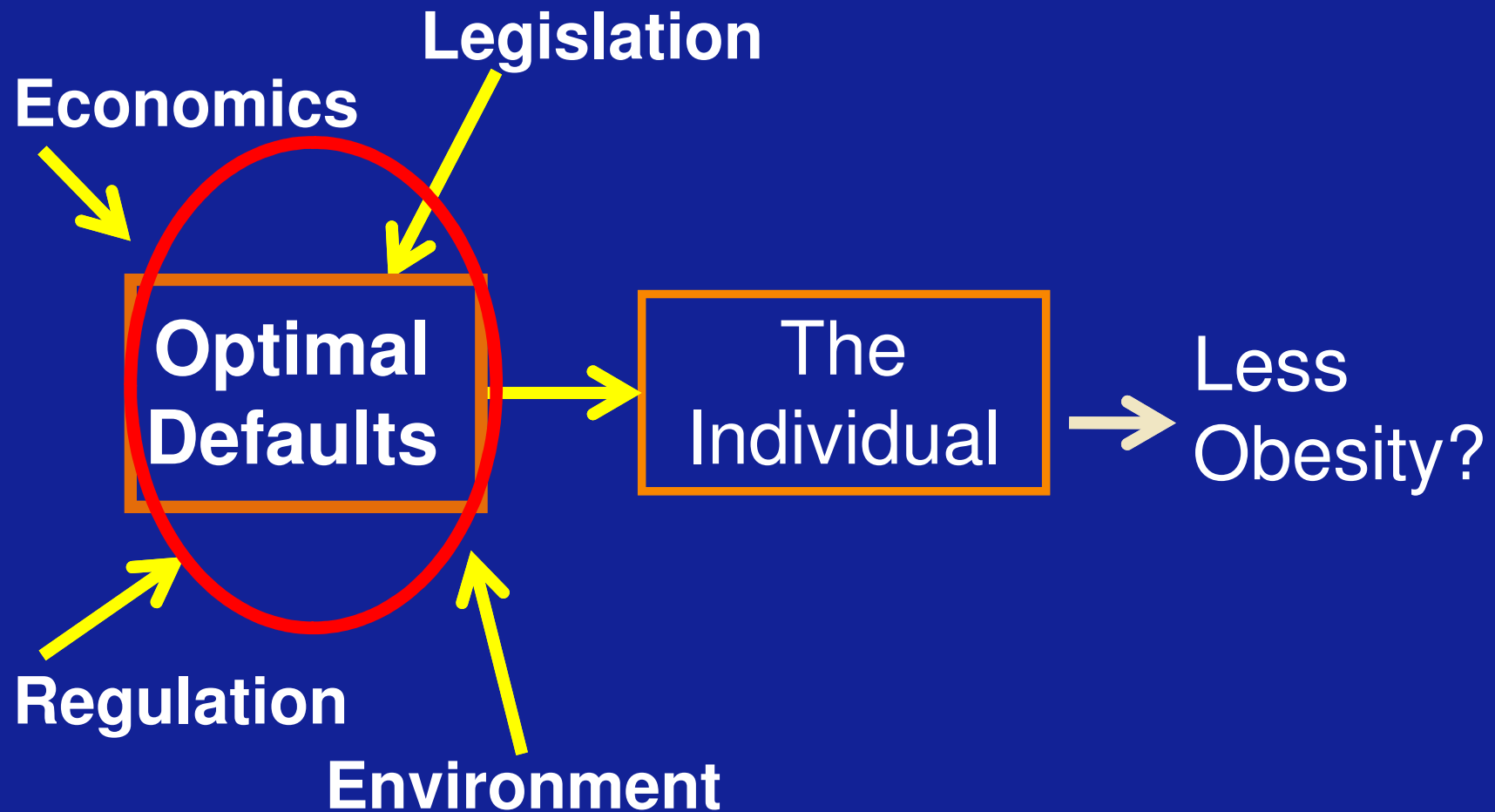
Tax as part of a broader approach



# How best to make change?

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# Change Environment: Optimal Defaults

# SSB “Environment”

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**THE TIMES 100**

**Within an Arm's Reach of Desire**



# Default: Encourages healthy behavior



Default: supports responsible behavior



OR



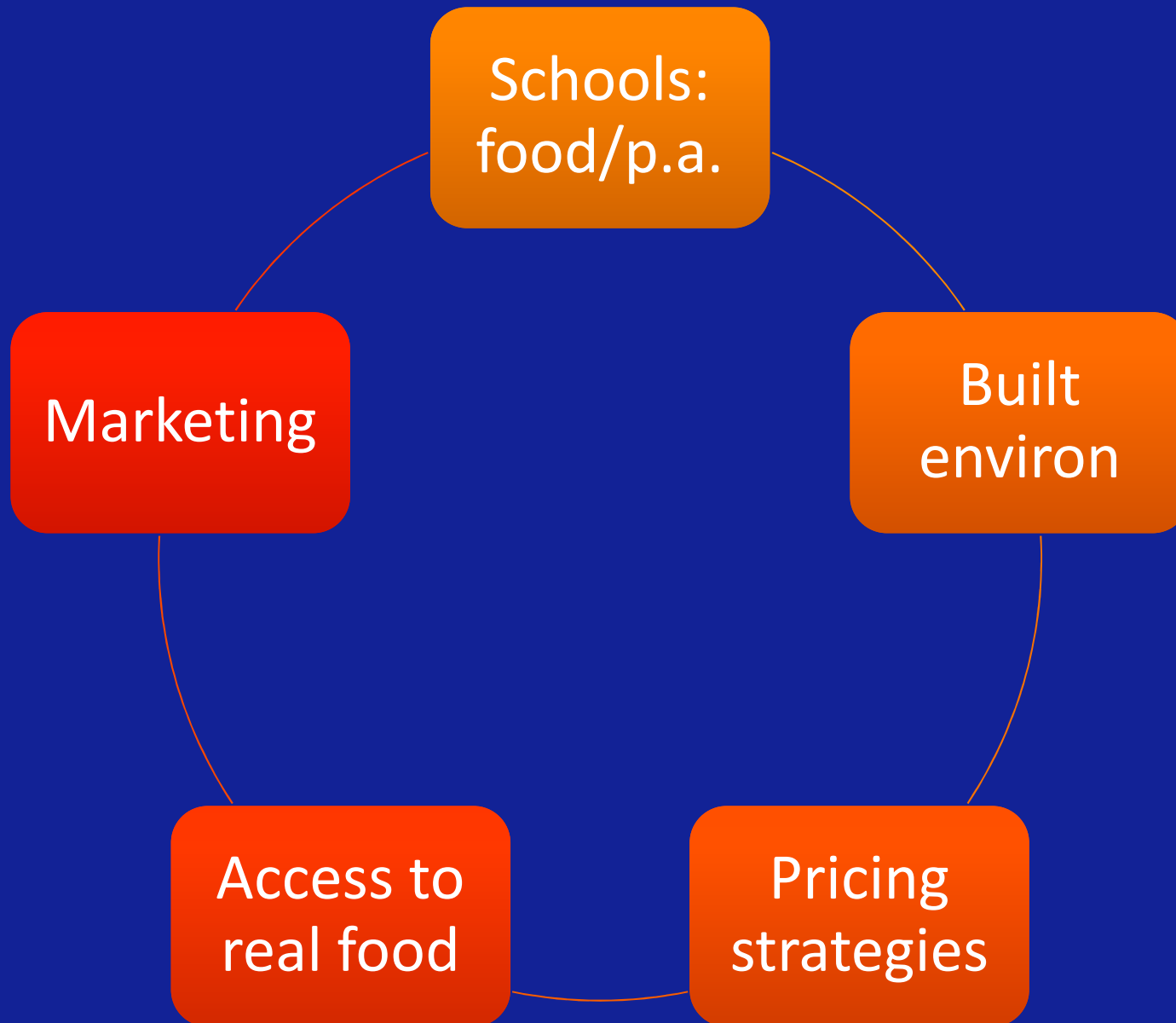
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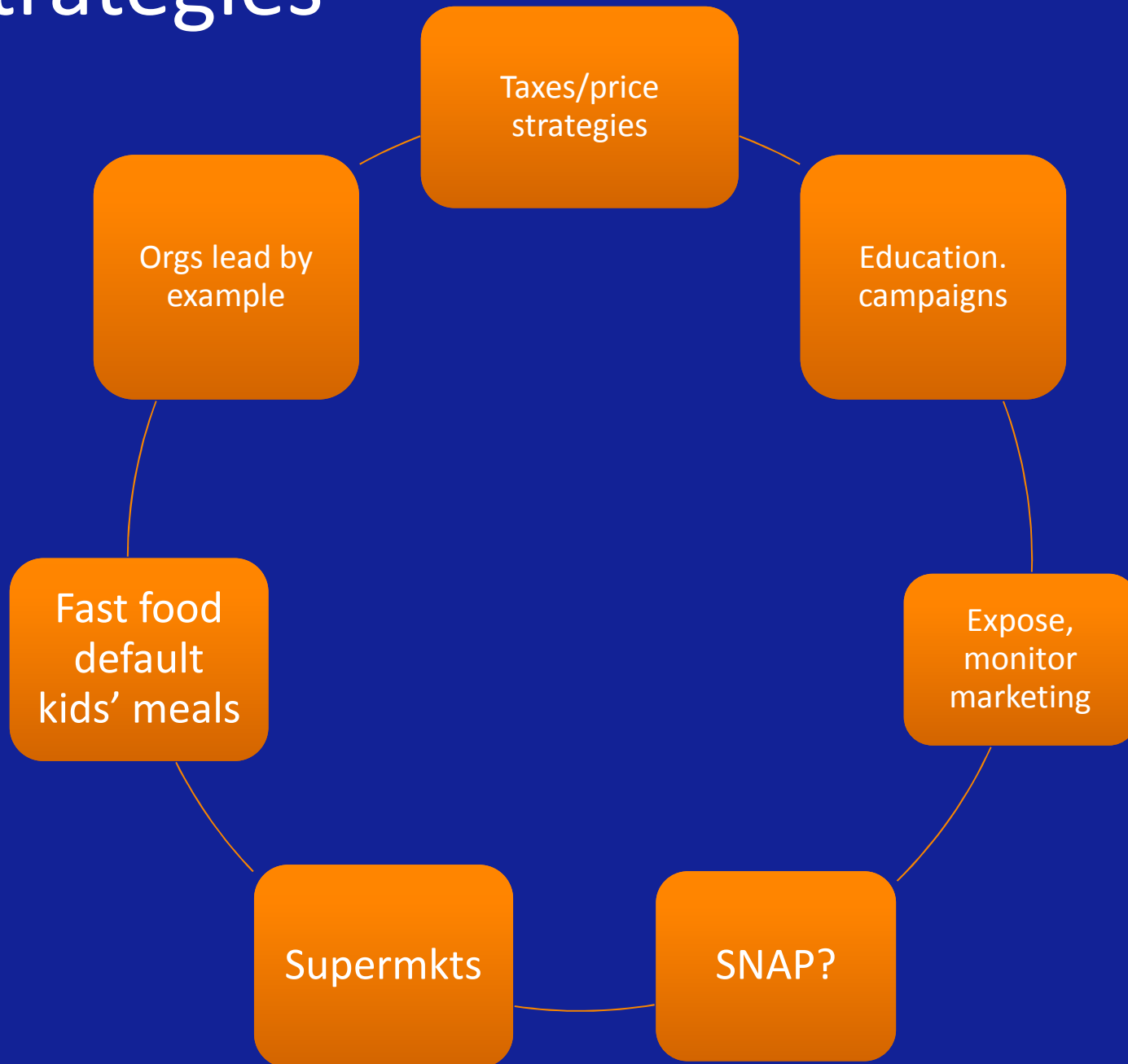
# Default: normalizes



# Obesity Prevention Strategies



# SSB strategies



Education:  
Portland, ME



**ARE YOU POURING ON THE POUNDS?**



23oz. Sweetened Tea + 20oz. Sports Drink  
+ 40oz. Large Lemonade + 20oz. Soda

**You're drinking 68 PACKETS OF SUGAR in just 4 sugary drinks a day.**

# Education: Youth campaigns



# Education: other

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- School curricula
- Health care professionals
  - Discuss with patients

# Lead by example: Healthy cities



Businesses : Visitors : Students : Government

**Mayor Menino Issues Order to End Sugary Drink Sales on City Property**

# Lead by example: Hospitals

Healthbeat 

## Sugary drinks out at 4 Chicago-area hospitals

Wednesday, April 25, 2012

ADVERT



FILE - A file photo of soda. (AP Photo)





# Lead by example: Churches



Seattle

Lead by example: no soda

**food  
banks**



# Monitor/Expose Marketing



Robert Wood Johnson Foundation

SEARCH BY KEYWORD OR TOPIC

About RWJF Program areas Publications and research Health policy Grants Newsroom

## Childhood Obesity

Childhood Obesity

- > The challenge
- > Our strategy
- > Team members
- > Programs and grants
- > Publications
- > Newsroom

Text size: [A](#) [A](#) [A](#) | [Comments](#) | [Print](#) | [Email](#) | [Share](#) | [Facebook](#) [Twitter](#) [LinkedIn](#) [Google+](#)

### Study Shows Widespread Marketing of Unhealthy Foods and Beverages in Maine High Schools, Despite Statewide Marketing Ban

School Administrators Overwhelmingly Support Law, but Need Help to Implement

Published: Mar 09, 2012



**Within an Arm's Reach of Desire**

# The Supplemental Nutrition Assistance Program, Soda, and USDA Policy Who Benefits?

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Kelly D. Brownell, PhD

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David S. Ludwig, MD, PhD

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Opposition to the New York proposal came from some surprising and not so surprising groups. With billions of dollars at stake annually, the beverage industry was predictably opposed. A spokesperson for the American Beverage



# Supermarkets

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- no SSBs in checkout aisles
- no SSBs on endcaps
- better beverages at eye-height
- signage:
  - “water is better for you”
  - “water is cheaper”
  - sugar amounts

# Other pricing strategies



Differential  
pricing

Minimum  
pricing

Discount  
better bevs

# Calls for reducing added sugars, SSB consumption

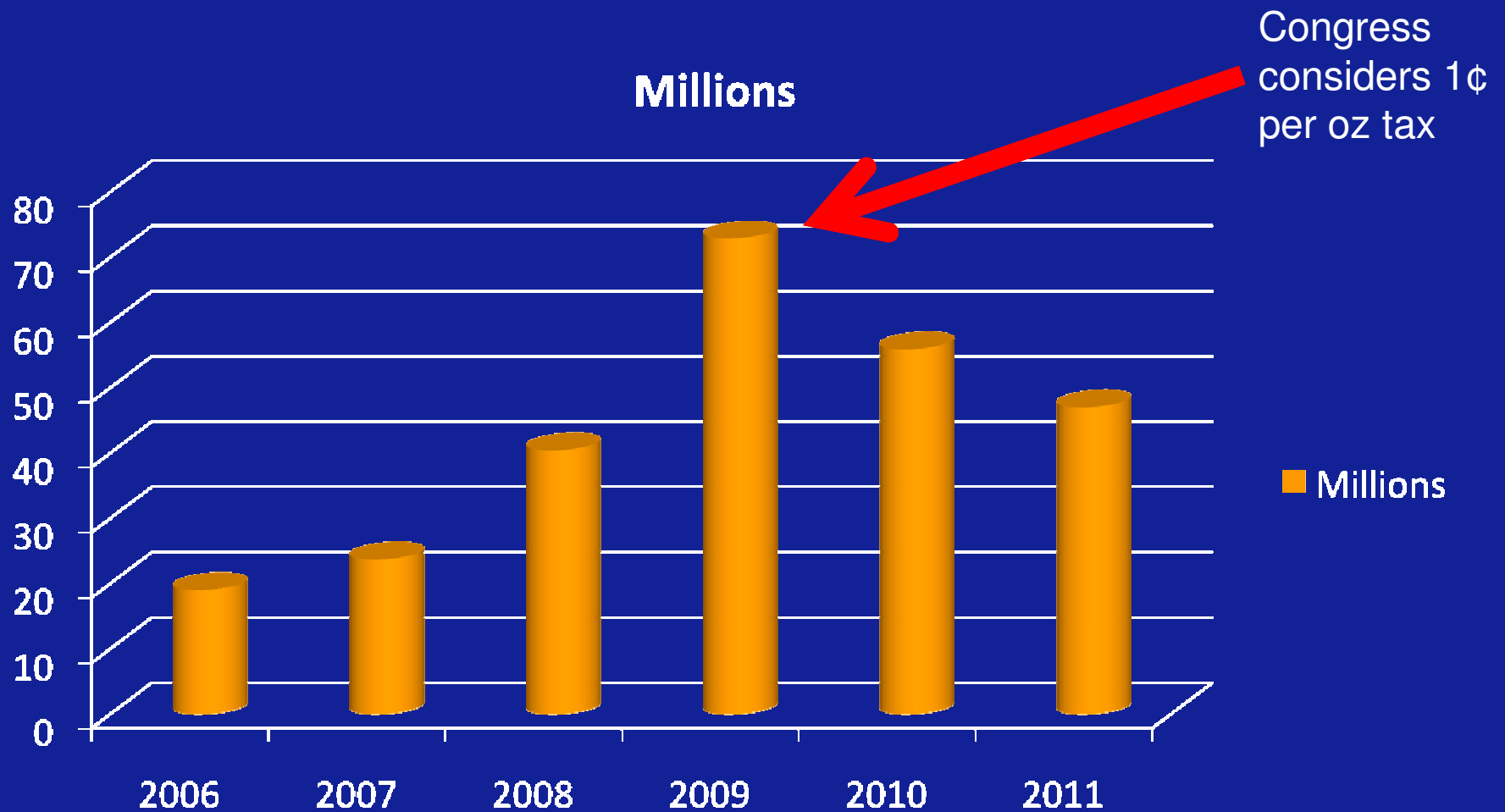
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- American Academy Pediatrics
- American Heart Assn
- American Medical Assn
- CDC
- Institute of Medicine
- USDA
- World Health Organization



What to expect from the industry

# Millions spent lobbying by industry



# Industry Defense

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Many things drive obesity	True
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It won't solve obesity	True
------------------------	------

Consumption is down, obesity is up	False
------------------------------------	-------

Sugar isn't special – all calories are equal	False
--	-------

It's about physical activity	False
------------------------------	-------

The science isn't clear	False
-------------------------	-------

People will lose jobs	False
-----------------------	-------

Tax would hurt the poor	False
-------------------------	-------

# “We’re part of the solution”

## My Coke Rewards School Donations

Donate points to your school, so it can get rewards like art supplies and sports equipment, and support all the ways kids play. Even the smallest point contribution can lead to great things for students in your community.

- ▶ Find a school and donate points
- ▶ Register your school and become a school coordinator





# How Sugar Daddy Lobbyists Killed the War on Obesity

By [DUFF WILSON](#), [JANET ROBERTS](#), Reuters April 29, 2012

# Clear on Calories





AMERICANS  
... AGAINST ...  
FOOD TAXES

Dear Washington,  
Are you listening?

**We have  
something to say!**

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ABOUT US | JOIN US | FACTS | NEWS | ADS

**84,519 signups**

**Think Smart. Be Smart. Act Smart.**

Now, more than ever, Americans must **think** smarter and **act** smarter. Especially when it comes to improving health care in America, an admirable goal we support. But we also know we **can't** tax our way to healthier lifestyles, and we need to make that clear to our members of Congress. After all, we do have an obligation to our children - and to ourselves - to promote healthy lifestyles through balanced diet and exercise. [More](#)

**Make your voice heard!**

STEP 1

**JOIN US**

STEP 2

**TAKE ACTION**

STEP 3

**TELL A FRIEND**

**SMART CHOICES FOR KIDS**



**EDUCATION NOT TAXATION**



**HEALTHY ECONOMY**



# [www.yaleruddcenter.org/ssbtax](http://www.yaleruddcenter.org/ssbtax)

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- Issue overview and fact sheets
- Tax information
- Revenue calculator
- Legislation
- Public opinion data
- Study synopses
- Supporting statements of nat'l orgs
- Additional resources



Thank you!

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[www.yaleruddcenter.org](http://www.yaleruddcenter.org)